PROCLUS

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Neo-Platonic Philosophy and Science

Lucas Siorvanes

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To Lisa, Smaragda, Rowena and George Siorvanes

Knowledge without reality and life is non-existent
Proclus, *El. Th.*, 197.20

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INTRODUCTION

Proclus was head of the school of philosophy at Athens, the 'Academy', from the early age of 25 until his death at 75. He lived in the fifth century AD during the time of the great barbarian migrations, the invasion of Attila the Hun, the fall of the Western Roman Empire and the rise of the Eastern Roman Empire, which flourished for another 1,000 years in Byzantium.

Proclus was the son of a barrister, an attorney-at-court, and was initially intended to inherit his father's practice. But while studying law he had a vision which revealed to him his true vocation in life, the search for the realities. Proclus turned to philosophy and science. He pursued them to the end of his life by combining analytical thinking with mystical inspiration and by leading a devout life: hard-working (reportedly writing 700 lines each day), vegetarian and worshipping all forms of the One God. People of many faiths and races came to hear him lecture; one of his visitors even became emperor of the West.

His philosophy, now known as Neo-Platonism but incorporating Aristotle and Stoicism, spread far. Neo-Platonism is not only the final flowering of ancient Greek thought but also the mode in which it was transmitted to the Byzantine, Western European and Islamic civilisations. It remained influential even after the Enlightenment, particularly among the Idealist philosophers. It can be found in Christian and Islamic theologies; in the decorations and architecture of the Gothic Cathedrals; in the light metaphysics of Robert Grosseteste, Jacob Boehme and the Quakers; in the Jewish Kabbalah; in the Latin Scholastics, Duns Scotus and Thomas Aquinas, and Byzantines, Michael Psellus and George Plethon; in Renaissance art, new science and mysticism; in the astronomy of Kepler; in the poetry of Dante, Spenser and the Romantics; and in the philosophy of the Cambridge Platonists, Hegel and Emerson. It has even spread to modern popular phrases such as 'levels of meaning', 'planes of existence', 'holistic' and 'organic'.

Plotinus was the first but by no means the sole founder. Porphyry and

Iamblichus disagreed with him and inaugurated cardinal changes. When Proclus became the head of the Athenian School, the post-Plotinian versions were in the mainstream. Proclus systematised Neo-Platonism and went on to dominate subsequent developments. During his fifty-year tenure, he brought it to its peak of influence. Thus, we can consider Proclus as the spokesman of mature Neo-Platonism.

Late Antiquity and Neo-Platonism still lie in the gap between compartments of scholarship, so the available studies are relatively few. Recent, more objective and penetrating research has begun to acquaint us both with the dynamic changes in Late Antiquity and with its cultural and intellectual vivacity. With the recognition that philosophy introduced many fresh ideas, and that we need to revise our views of this period radically, there has come a tremendous upsurge of interest in the field worldwide.

In the confines of this volume, I try to cover most areas of Proclus' very broad philosophical interest but concentrate on the underlying themes in metaphysics and epistemology. Each chapter has two aims: to present a general survey of Proclus and his Neo-Platonism, and to introduce new research and clarifications. It is thus hoped that the reader will become familiar with the facets of Neo-Platonism and will be encouraged to delve deeper into the primary sources. To assist the reader, I supply some 200 quotations, which include Greek terms in their original grammatical form. For the transliterated Greek, I have opted here for the scheme where u is rendered as y, except in diphthongs, since I have been persuaded that pronunciation in the fifth century AD was Byzantine, and thus closer to 'kathareuousa' Modern Greek. My overall method is to present the material in the context of the ancient author. One theme which I consider to be characteristic of Proclus' system, and period, is that of unity–diversity. Since my study of Proclus has not been limited to the trodden field, I offer an examination of the neglected area of Proclus' thought, his natural philosophy. I encountered fresh ideas on the problems of knowledge and reality which did not surface again until the early modern era. All this puts Proclus under a new light, for he was indeed more than just a metaphysician.

The last book in English on Proclus' general metaphysics was by L. J. Rosán in 1949, which was published by a small print-press. However, this fact would obscure the eminent treatises on Proclus' system by W. Beierwaltes in German, the studies by J. Trouillard and P. Bastid in French, the studies on Proclus' theories of being and causality by S. Gersh in English, the collections of papers from two conferences in France and Switzerland in 1985, and A. C. Lloyd's *The Anatomy of Neoplatonism*

(1990). R. Sorabji has opened the field wider with three volumes on late ancient theories of time, matter and ethics, but as part of the evaluation of Aristotelian thought. Still, there has never been a general book on Proclus' Neo-Platonic philosophy, both metaphysical and natural.

CONTENTS

Chapter 1 is a biography of Proclus in the context of the history of Late Antiquity. This is a fascinating period whose repercussions still appear in the news. Besides, it is a suitable place to present the Neo-Platonic views on social affairs. The account of Proclus' School and key personalities at Athens and Alexandria (several of whom are cited later in the book) continues with an attempt to cover his influence to modern times in the fields of philosophy, theology, science, the arts, mysticism etc., so that the reader may find all historical material in one chapter. To this I append a short evaluation.

Chapter 2 examines in detail the general principles of Proclus' system. They permeate his analyses of all topics, from metaphysics and religion to physics and astronomy. To these central concepts I cross-reference many of his other theories.

Chapter 3 concentrates on each level of his system. Instead of starting from the top (the One) and proceeding to the bottom (matter), I decided here to start from the phenomenal (body) and advance to the fundamental (unity). This enables me to present the complex system in its more practical, educational context: the Neo-Platonic curriculum of knowledge and virtue. Further, this order helps to clarify the close connection of the One to matter (on which Proclus disputed Plotinus) and the problem of simplicity. The chapter is completed with a look at Proclus' three paths to God – eros, philosophy and theurgy – in the context of his modes of being and knowledge. This also allows me to break the long narrative with some of Proclus' poems.

Chapter 4 opens Proclus' metaphysics to the problems of body, matter, motion and space. Greek philosophers were deeply concerned with these issues from the very beginning of philosophy, for they affected how the definition and principles of things are to be conceived. Platonists introduced many significant innovations.

Chapter 5 focuses on a challenge to Proclus' metaphysics. Greek astronomers discovered that the supposedly perfect celestial objects orbit unconventionally. Thus, the whole chapter is essentially a case-study analysis of the live philosophical problem of mind-dependent versus mind-independent knowledge. How did Proclus fare in the test?

ACKNOWLEDGEMENTS

Little did I know in 1979 that a study on the transmission of Greek thought, and the purchasing of one of the last hardback copies of Dodds' *Proclus. The Elements of Theology*, would lead to such a long engagement with such a subject. I benefited from the encouragement and counsel of many scholars in the fields of philosophy, classical and Byzantine studies, and history and philosophy of science. Repayment can never be adequate, so I should like to offer my gratitude to all, including Henry Blumenthal, Robert Browning, Averil Cameron, Marie Boas Hall, Alan Lacey, Antony Lloyd, Dominic O'Meara, David Pingree, Piyo Rattansi, Henri-Dominique Saffrey, Mark Sainsbury, Lawrence Schrenk, David Sedley, Alain Segonds, Robert Sharples and Richard Sorabji. Some of the best critics are one's students, so I should like to thank especially those who ask persistently 'why?'

The research was supported by a residential Fellowship at Dumbarton Oaks, Washington DC. I am grateful to the Senior Fellows and the Director of Dumbarton Oaks, and to the Trustees for Harvard University, for the opportunity to enjoy the tranquil yet stimulating research environment. Special thanks also go to Irene Vaslef, Librarian of the Byzantine Library, Natalia Teteriantikov, Director Byzantine Visual Resources, and Joseph Mills, Photographic Section. Further assistance in the USA was provided by the Fulbright Program of International Exchange of Scholars, which awarded me a Senior Scholar grant (Philosophy). I also profited from the Fulbright Conferences on contemporary issues, some of which were relevant to the historical chapter. In the UK, research was aided by a Leverhulme Trust Research Fellowship, and I am grateful to the Awards Committee for their generous support.

L. S.

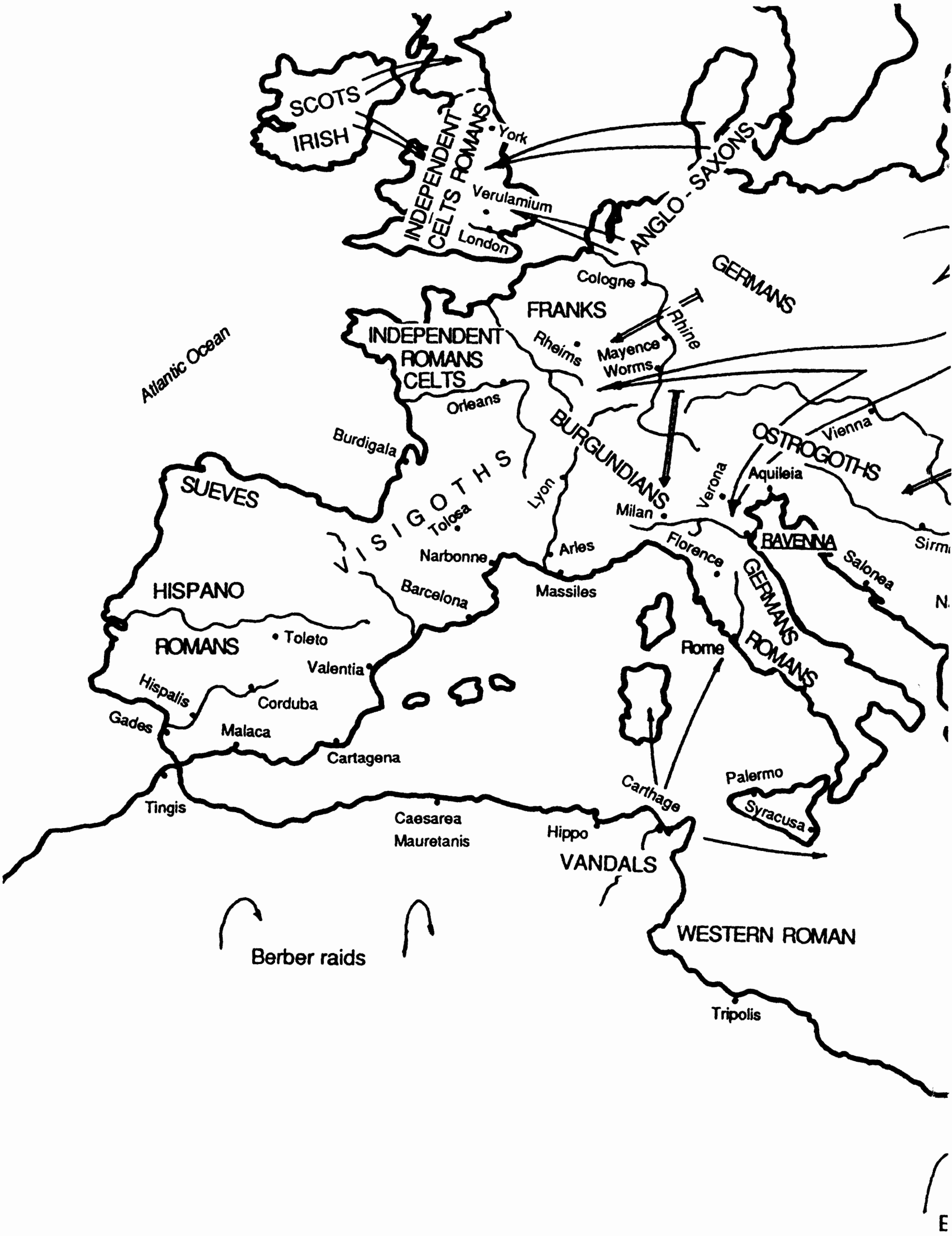
NOTE ON THE COVER ILLUSTRATION

The jacket illustration is based on a head, No. 581 in the Roman Collection of the National Archaeological Museum, Athens, Greece. The type is of a Late Antique philosopher with the characteristic outward and upward stare. The forehead is trisected exactly at 1.5 cm intervals from the hairline to the beginning of the nose, probably indicating the three main Neo-Platonic metaphysical levels. Made of sparkling white marble, the head measures 31.8 cm (12.5 inches) high, 13 cm wide, and 23.3 cm deep. Two-fifths is missing. I first inspected the head in 1980. The help of A. Stauridê and M. Oikonomidou is gratefully acknowledged. In 1990 I examined it in more detail. I thank Mrs Rômiopoulou and O. Tzachou-Alexandrê for their generous help, the photographs and publication permission.

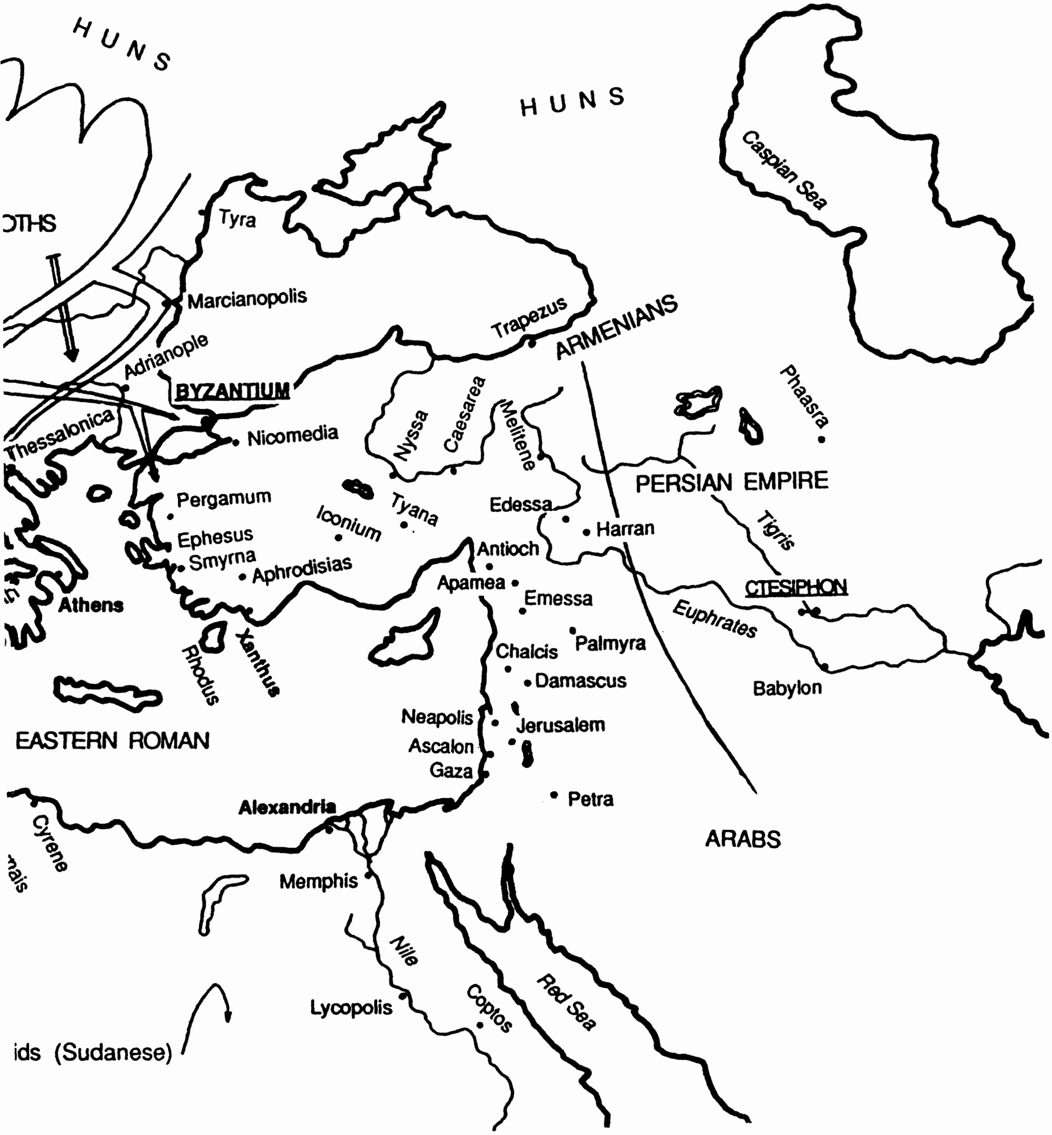
The head was found in the south side of the Acropolis, in the Serpentzé wall, in 1876–7. This was the locality of Proclus' School (*V. Procli*, 29): 'in the neighbourhood of the Asclepieion temple which Sophocles made famous, and of the temple to Dionysius close to the Theatre'. Gerhart Rodenwalt published the head in a collection of late antique busts, many of them of philosophers (*Griechische Porträts aus dem Ausgang der Antike* (Berlin, 1919), p. 4, pl. III (n. 2)), and speculated that it might be that of Proclus. More recent research has suggested an earlier Neo-Platonist, Iamblichus (H. P. L'Orange, 'Some remarks on late Greek portraiture, especially the Iamblichos type', *Acta ad Archeologiam et Artium Historiam Pertinentia* 6 (1975), pp. 59–63), or perhaps Porphyry (P. Kalligas, *Porphyry on the Life of Plotinus* (Athens, 1991), frontispiece and appendix 3). See also E. Voutiras, 'Ein wiedergewonnenes attisches Porträt der Spätantike', *Mitteilungen des Deutschen Archäologischen Instituts (Athen)*, 96 (1981), pp. 201–8 and A. Ntatsoulê-Stauridê, *Roman Portraits in the National Archaeological Museum in Athens* (in Greek) (Athens, 1985).

According to his biographer, 'Proclus was very attractive to see; for not only had he a symmetry in appearance but also the beauty of his soul bloomed on his body and, like a living light, shone wonderfully in a manner which is hard to put into words. He was so elegant to behold that none of the painters was able to capture completely his likeness: although their works were excellent, they all fell very short in the imitation of the true form' (*V. Procli*, 3).

L.S.



Map: Proclus' world, fifth century AD


HUNS
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Nicomedia
Trapezus
ARMENIANS
Caspian Sea
Phaasra
Nyssa
Caesarea
Melitene
PERSIAN EMPIRE
Pergamum
Tyana
Edessa
Harran
Ephesus
Iconium
Tigris
Smyrna
Aphrodisias
Antioch
Apamea
Emessa
CTESIPHON
Athens
Euphrates
Palmyra
Chalcis
Rhodus
Xanthus
Damascus
Babylon
Neapolis
Jerusalem
EASTERN ROMAN
Ascalon
Gaza
Alexandria
Petra
ARABS
Cyrene
Memphis
Nile
Red Sea
Lycopolis
Coptos
ids (Sudanese)

1

PROCLUS' LIFE, TIMES AND INFLUENCE

Proclus lived from about AD 411 to 485. Uncertainties remain regarding his year of birth, but his time of death is confidently determined by his biography, which even gives us a date: 17 April.

Proclus' biography, the main source of information for his life, was written by Marinus, Proclus' immediate successor as Head of the School at Athens. Marinus was from Neapolis (modern Nablus), a major Hellenised city in Samaria. The biography follows a stylistic plan based on the Neo-Platonic theory that 'true happiness' (*eudaimonia*) depends on the kinds of virtue which one attains during life, and reviews Proclus' progress according to each; it almost functions as a 'Hellenic' hagiography. It bears similarities with other biographies of sages, such as Porphyry's Life of Plotinus, Philostratus' Life of Apollonius of Tyana (the Neo-Pythagorean who rivalled Jesus), and Iamblichus' Life of Pythagoras. Proclus' Life is a rich source of 'inside' information on Proclus and the kind of community that he lived in, presented by someone who knew him intimately and shared his way of thinking. It was written less than a year after his death.

The other source is Damascius' Life of Isidorus, extant only in fragments. Damascius was the Head of the School at the time of Justinian's ban in 529. His is a more prosaic account, full of invaluable information, including many irreverent anecdotes about the later Platonic philosophers and Proclus.

1. EARLY YEARS AND RISE TO HEADSHIP

Proclus was born in Byzantium, the 'New Rome', the jewel of the Eastern Roman Empire. The problem about his year of birth is irreconcilable data: according to his corrected horoscope he was born on 8 February 412; but according to his cited lifespan, 75, and year of death, he was born around 410. Of the two, the horoscope is the less reliable. We do not know its provenance; it needs substantial emendations to be consistent; the place-of-birth datum is wrong (not for the latitude of Hellespont/Byzantium); most importantly, it is crudely cast and is well below Proclus' astronomical standards. On the other hand, the biography cites unambiguously in two different sections (3 and 26) that Proclus lived for seventy-five years. At any rate, Marinus did not know Proclus' date of birth, or he would have mentioned it just as he did for his time of death. Later in this chapter, I submit that the horoscope is not Proclus' birth certificate but a backdated construct cast after his death for the purposes of the biography. Further, I show that most of the ages, including 75, which are cited in the biography, are laden with Neo-Platonic symbolism. I suggest that Proclus was born around early 411.

Proclus' parents, Marcella and Patricius, 'joined in legal marriage' as Marinus happily confirms, were of high birth. His father was a barrister, an attorney-at-court, with a successful practice. His parents came originally from Xanthus, a wealthy seaside town in Lycia, Asia Minor, which had a famous ancient temple of Apollo (sculptures of it can be seen at the British Museum).

They returned to Xanthus when Proclus was still a child. Marinus does not tell us why and when they left the capital, but we can guess. The first option is that Proclus' father was promoted, with relocation to his native city as an irresistible side-benefit.[1] Yet it must be questioned: how could relocation away from the capital and the imperial court be advantageous to a law advocate? Significant changes in Byzantium about that time point to a deeper reason for the move, and provide a date. Theodosius II, the appointed Eastern emperor, was still a minor. It was a time of distress for the empire. In 410, near Proclus' birth, the Visigoths had sacked Rome, the Eternal City. The guardian who ruled in the name of the emperor in the East was the praetorian prefect Anthemius. He was responsible for many important public works including the great walls of Byzantium. They were initially intended for defence against the Huns, and lasted with periodic restorations for 1,000 years until Turkish cannon reduced them in 1453. His regency continued until 414, when Theodosius' elder sister Pulcheria decided to take over. She was a strict, almost fanatical Christian who declared herself a virgin, even when she later married, and turned the palace into a monastery staffed with eunuchs. Most of the educated and professional classes of that period still adhered to the traditional religion of classical Greece and Rome, and called themselves 'Hellenes'. In other words, in the eyes of the Christians they were 'pagans'. Anthemius was known to be a Christian. However, his associations with 'Hellenes' suggest that he might have been receptive to them.[2] Was he more interested in power politics than in religious affiliations? Rumours abounded on the degree of his support. For example, in the early years of his regency he had promoted Lucius, a Roman and a pagan, to the office of Master of the Army, who is said to have aided him against the forthright Patriarch John Chrysostom. If so, then this would be the same Lucius who, according to Damascius (*Vita Isidori*, fr. 303, pp. 241–3), attempted to assassinate Theodosius II in order to restore the 'indissoluble faith', paganism, and become a new emperor Julian. In July 414, after a series of palace intrigues, Pulcheria removed Anthemius from his position and from history. Radical moves against non-Christians began soon thereafter.

In 415, a new law was passed that forbade the building of new synagogues and allowed the destruction of those that had been deserted. In Alexandria, the celebrated commercial and cultural centre of the eastern Mediterranean, fighting between Jews and Christians gave the opportunity to the new bishop Cyril to lead a Christian mob against the Jews and force them in their thousands out of Alexandria. He is the same Cyril who is said to have incited, in the same year, the cruel murder of Hypatia by another Christian mob. Moderate Christian leaders pleaded for the cessation of violence. Damascius (*Vita Isidori*, fr. 102) attributes the atrocity to Cyril's envy of Hypatia's popularity – though local politics was the main reason. Hypatia was the leading figure in Neo-Platonic philosophy and mathematics at Alexandria. She was the daughter of Theon of Alexandria, the author of the *Handy Tables* of astronomical positions (which were used both for astronomical and astrological purposes), and of commentaries on Euclid and Ptolemy's *Syntaxis*. Hypatia was also famous for her candid dismissal of advances made by lovesick students. Damascius records with some admiration the episode in which she lifted her skirts, presented the stunned student with her bloody sanitary towel and exclaimed: 'this is what you desire, young man, and it is no good! . . . which changed his mind and disposed him to be more sensible' (thus Hypatia is now regarded as a paradigm of feminism). Still, in 415 another new law was passed. It was the first general exclusion of pagans from imperial service and the army. Therefore it is most reasonable to assume that devout 'Hellenes', like Proclus' parents, felt obliged either to lie low or to move out of Byzantium. However, pagan influence was not checked. A century later, the Emperor Justinian found it necessary to issue further persecutions and to target intellectuals and professionals, such as barristers.

Proclus' father intended him too for a legal career. Most occupations had become hereditary. After studying for a while at Xanthus with a private tutor, the young Proclus was sent to Alexandria to study rhetoric and Roman law. Rhetoric, the art of persuasive speaking and writing, was traditionally part of the education of those who were destined for a public career. More than just the making of speeches, it involved the construction of arguments and their defence in vigorous debate. Roman law was, as it still is, a core subject of legal studies. In these, according to Marinus, Proclus excelled. He also learned Latin, although there is no evidence that he wrote it. He studied with a certain Orion, a grammarian of Egyptian priestly caste, and with Roman teachers, but mostly with a well-connected sophist, Leonas of Isauria (*V. Procli*, 8). Leonas introduced Proclus to the prominent figures of Alexandria, including its Governor, Theodorus. When Theodorus instructed Leonas to visit Byzantium, the latter chose the young Proclus to accompany him. All this activity links to the complete reorganisation of the Byzantine Schools by Theodosius II around 425.[3]

At Byzantium, Proclus had a vision (according to Marinus). Athena, the goddess of wisdom, appeared to him in a dream and advised him to turn to philosophy and go to Athens (*V. Procli*, 6 and 9). This means that he encountered influences from Athenian Neo-Platonism. Given the uncompromising paganism of the Athenian School, it also means that conditions in the capital must have changed sufficiently for such influences to have flourished. Things had definitely changed. Pulcheria was now overshadowed by another empress, the wife of Theodosius II, Eudocia (married 421; Augusta 423). She was born and educated at Athens. Before she was baptised, so that she could marry Theodosius, her name was Athenais. Her father and teacher, Leontius, was an Athenian sophist and a 'Hellene'. According to one reading,[4] Athenais-Eudocia, her father and her relatives still moved in pagan circles occasionally of the theurgic Neo-Platonist variety – though internal politics was probably the key motivation. The expansion and elevation of the School at Byzantium are owed to her, as well as the ascendancy of Greek language over Latin. Intellectuals of the classical tradition benefited by her influence in Byzantium.

Proclus returned first to Alexandria, gave up his legal studies and started to study philosophy. He studied Aristotelian logic with one Olympiodorus, and mathematics with a certain Heron; the latter taught him also his religion, meaning some kind of Neo-Pythagoreanism. It remained an important part of Proclus' religion and science. Proclus did very well with logic, partly because of his formidable memory. Olympiodorus was so pleased that he wished him to marry his philosopher-daughter. However, Proclus grew dissatisfied with Olympiodorus' interpretation of Aristotle and sailed to Athens at the age of 19. We can date this to 430, the year of Augustine's death (at Hippo).

At Athens, he was quickly accepted in the close-knit circle of devout

'Hellenes' who administered and lectured at the 'Academy'. They soon sensed his potential for leadership. One of them pronounced: 'he will either be a great blessing or the opposite' (*V. Procli*, 11). This was Plato's recognition that a gifted mind will become pre-eminently either good or bad, depending on whether the person is educated or not (Plato, *Crito* 44d, *Rep.* 191e). Whether the transition from law to philosophy happened with his parents' approval we do not know, for they drop out of the picture entirely. Significantly, the biography now focuses on how Proclus became intimate with Syrianus, the acting Head of School, whom he later acknowledged as his spiritual father. It is as if Proclus' material origins, the parents of his physical self, had ceased to be relevant: on coming to Athens, the city sacred to the goddess of wisdom, he had been reborn to philosophical life.

Under Syrianus, he was instructed in Aristotle and Plato in the distinctive Neo-Platonic manner of education: Aristotle and each Platonic dialogue corresponding to the appropriate level of understanding of 'reality'. Before he was entrusted to Syrianus, Plutarch, the retired Head of the School, took on Proclus as a special favour and introduced him to Aristotle's *de Anima* and Plato's *Phaedo* in two years (when Plutarch died). Plutarch is credited with the introduction to Athens of Iamblichus' Neo-Platonism and the rescue of the Platonic School from obscurity. From the little we know, it seems that Iamblichean Neo-Platonism travelled to Athens, and Plutarch, through Priscus and a second Iamblichus.[5] Plutarch of Athens should not be confused with the second-century Plutarch of Chaeronea, whom all the Neo-Platonists, including Proclus, rejected as un-Platonic, particularly his notion of an evil world soul.[6] Proclus completed Aristotle with Syrianus in two years, and seems to have completed Plato by his twenty-fifth year. This brings the total duration of his higher studies at Athens to six years.

This education included less elevated subjects such as political philosophy (see below), which, as Marinus does not fail to point out, was to prove useful later in the administration of the School and in dealings with the civic authorities. He was also instructed in the 'theurgic' Neo-Platonism, as derived from the Orphic and Chaldaean writings, and was initiated into its secret rites by Asclepigeneia, the daughter of Plutarch. Upon Plutarch's death, Syrianus succeeded formally to the headship.

Proclus by this time had definitely become one of the family. He lived with Syrianus' family; he was treated on equal terms with Syrianus' own son; he called Syrianus 'father', speaking of Plutarch as 'forefather'. Under Syrianus' influence, and certainly with his lecture notes, Proclus embarked on the grand task of composing a commentary on Plato's

Timaeus, and 'much else', as Marinus puts it (*V. Procli*, 13). These he completed, perhaps in first draft, by his twenty-eighth year. There is evidence that he may have begun work at the time of Syrianus' death. Because of an obscure reference to Domninus of Larissa as a rival, there has been an interpretation that the succession to Syrianus was in dispute. Nevertheless, it seems certain that Domninus left and that Proclus became the sole leader of the School and the Platonic 'Successor' (*Diadochos*) of the 'Golden Chain' at around his twenty-fifth year.

Proclus spent fifty years in charge of the last institution of philosophy at Athens and the leading School of higher learning of the empire. During this time, he taught and preached Neo-Platonism in five or more lectures a day, wrote his voluminous works at the rate of 700 lines daily, discharged his administrative duties to the School and the imperial authorities, and found time to practise his religion rigorously (*V. Procli*, 22, 17–19). He never married, not through lack of offers or predisposition (several of his hymns to female deities end with personal appeals for liberation from strong carnal desires). He was already married to his vocation. Above all he was a workaholic and a dedicated teacher, his less pleasant character traits being impatience and a short temper induced by his perfectionism. Damascius (*V. Isidori*, 154) quips that one could tell who was Proclus' favourite student, being the only person with whom he did not get annoyed. Marinus, in his master's hagiography, admits:

> whenever he found someone not taking his work seriously, he reprimanded him severely. This made him appear quick-tempered and overzealous (*philotimon*), because he wanted, and was able, to judge everything correctly . . . Nevertheless he was mild at the same time; for he checked his anger quickly, and as easily as flipping an oyster-shell [cf. Plato, *Rep.* 521c] he became soft as wax. (*V. Procli*, 16; cf. Hermeias, *In Phaedr.* p. 60)

2. LATE ANTIQUITY AND THE NEO-PLATONIC VIEW OF POLITICS

Proclus' life spans most of the fifth century, a period that saw cataclysmic changes. Away from the philosophical life, it was a time of devastation involving the collapse of the western frontiers of the Roman Empire (406–10), the great barbarian migrations, the invasion of Attila the Hun (440–52) and the sack of Rome, first by the Visigoths (410) and then by the Vandals (455). Finally came the end of the Western empire itself (476). One of Proclus' distinguished visitors, Anthemius, a patrician from Byzantium, became emperor of the West and was subsequently murdered (reign 467–72). Nearer home, the pagan Neo-Platonists had their temples ordered closed (395, 399, 435) and their practices forbidden by the Eastern Roman emperors. In Proclus' own time, temples were closed and we see a slow transition from pagan to Christian predominance. In ancient as in modern Mediterranean countries, issuing a law and enforcing it are two different things. There was the fearsome anger of the Christian mob, who had earlier (415) murdered Hypatia. In the Neo-Platonists' frequent dark references to the Christians, the mob was the 'wild beast' that had to be left sleeping at any cost.[7] But it was also a period of settlement and beginnings. In the West, new kingdoms were born: of the Franks and Burgundians in Gaul (450s), the Visigoths in Provence and Spain (420s), and the Ostrogoths in Italy (480s), who all continued the Roman culture, and of the Anglo-Saxons and Scots in Britain (450s) who did not. Meanwhile in the East, the traditionally wealth-producing half of the empire found itself freed from the responsibility for the West, and enjoyed an economic increase. In the context of the difficulties facing the empire, philosophical, religious and political ideas flourished.

What remains intriguing is the question of the Neo-Platonists' participation in the society in which they lived. That the philosophers were fully aware of the momentous events cannot be disputed. Damascius mentions many of the principal historical figures, including Attila. Most of the leading Neo-Platonists had aristocratic pedigrees, and their involvement with statesmen is well recorded from the fourth century onwards (e.g. Eunapius' *Lives*). Secondly, there is the inescapable similarity between the hierarchy of late Neo-Platonic metaphysics and that of late Roman/Byzantine administration. But there is precious little evidence of their thoughts, in keeping with the ethos of showing impassibility, 'apathy', to the world of violent emotions.

Neo-Platonic political ideas seem to be based mainly on Plato's *Republic*, *Laws* and *Gorgias* and to lesser extent on Aristotle's *Politics*. Plato's and Aristotle's political philosophies had already permeated Mediterranean courts since the days of Aristotle's student Alexander the Great. Alexander's supreme achievement in extending one rule over Greece, the Near East and Egypt culminated in his controversial divination (*apotheosis*), an act out of keeping with traditional Greek honours. The idea that the monarch is 'ensouled law' (*nomos empsychos*) and God's representative to the state took hold, and was promoted by some Neo-Pythagoreans. Alexander became closely identified with a new world order in which all free people, 'barbarian' and Greek alike, are 'cosmopolitans', citizens of one world-state (*kosmopolis*), not of parochial, particular city-states. To this purpose he encouraged, sometimes by force, the mixing of Greeks with Persians, Syrians and Egyptians. The Cynic philosophers had already proclaimed that humans are not just members of their society, but part of universal nature: therefore the individual is both self-sufficient (*autarkês*) and a citizen of the cosmos. We shall meet 'self-sufficiency' again as the linchpin of Proclus' metaphysics. In the period of Alexander's successors, the Hellenistic, these notions supported a political theory that established the *polis* as the common home of all (for instance, a third-century BC Cynic, Bion, was court-philosopher to a Hellenistic king). Witness the cities built by the Hellenistic monarchs. They were the first truly urban centres, and the word 'cosmopolitan' became popular with their rise. Nevertheless, the Stoics were the ones who spread the cause to the circles of Roman statesmen.

These influences were in the mind of emperors, irrespective of their pagan or Christian faith. For example, when the empire was christianised (fourth century), Bishop Eusebius, the advisor to Emperor Constantine the Great, propounded that the Roman Empire is the instrument of God's plan to save humanity. These ideas helped sustain an unshakeable belief that the best possible government in this imperfect world is that of one state for all, headed by a ruler with the attributes, privileges and responsibilities of God. Far from being a romantic ideal, it was put into administrative practice: for example, the creation of the cult of the emperor, and the extension of Roman citizenship. It worked for centuries by supplying the cement of an empire composed of diverse peoples, languages, customs and religions.

However, this is too broad a brush, for it applies to emperors from early Rome to Byzantium. For more specific detail, a helpful source is the fourth-century Emperor Julian.[8] He was brought up a Christian but converted to paganism and was a student of Iamblichean Neo-Platonists. Julian shows that on closer inspection Plato's more metaphysical political theory was regarded as superior, and on occasion antithetical, to Aristotle's more practical one. In his early Letter (to Themistius), Julian rejected the Aristotelian practical wisdom that rulers with outstanding virtue and skill should embody the law and be themselves exempt from the laws made for the rest of people. Instead, Julian upheld the institution of God-given monarchy, because the monarch and lawgiver must be someone purified enough to grasp the divine laws founded in Ideal Justice. In a later Letter (VI), he confirmed that the difference between these two views on monarchy lies not in politics but in the place of the monarch in the grand scheme of things. Even the best and highest of monarchs is still subject to divine, universal law. The best ruler is precisely the one who understands divine law best and lives by it. Julian went on to practise what he preached: he dressed and lived simply, he addressed his subjects as 'fellow citizens'. Unfortunately, given Julian's idiosyncrasies, discerning whether his political views were also those of his Neo-Platonist teachers is difficult. Recent studies on Iamblichus' political philosophy[9] and later Neo-Platonists (Hierocles, Ammonius) corroborate that Neo-Platonic education nurtured and actively promoted the Platonic tradition of the philosopher-king. Teaching of the *Republic*, the *Laws* (and the *Seventh Letter*) and the *Gorgias* aimed to educate the soul, and to instill the virtues one by one until the student came to realise the divine within.

Proclus himself believed that political science has its foundations in intelligible reality. Because it concerns human affairs, it is inferior to physical science, which deals with the cosmos. Metaphysics, the cosmos and the human condition are connected. What constitutional government (*politeia*) is to the state, a sense of justice is to the soul, and order is to the cosmos. In a way, constitutional government with its characteristic properties of order, justice, reason and completeness is common to all existence. As he puts it, '*politeia* pre-exists in the intelligibles, is established in the heavens, and finally resides in human lives'.[10] These elevated ideas are found near the beginning of his great *Commentary on Plato's Timaeus* (*In Tim.* 1.28–35, on Plato, *Tim.* 17c ff.), because that is the part where Socrates reviews the political sections of the *Republic* (books 2–5).

For more concrete examples of Proclus' involvement with politics, we have to go back to his biography. Marinus devotes four whole sections (*V. Procli*, 14–17) to describing how well Proclus exercised the political or social/civic virtue. First he is said to 'have received' it by studying Aristotle's *Politics* and Plato's *Laws* and the *Republic*. This fits with the classical theory that virtues can be taught, though in a later statement (end of section 15) we encounter a more precise description that combines Platonic and Aristotelian elements of virtue and courage: 'acquiring it first by nature (*physei*) and habit (*ethei*), then by knowledge (*epistêmêi*) and reasoning (*logismôi*) on the causes . . . he showed how the political disposition (*hexin*) can be put into action (*praktikon*)'. Returning to section 14, the philosophical quandary comes next: how can philosophers show social concern with word and deed when they must be preoccupied with higher things?

One solution is to find good and pious persons who will be prepared to become politicians, then to teach them and direct them as a coach does the runner. Proclus found at least one such person in Plutarch's grandson, Archiadas, whom he urged 'to lead his own city [Athens] for the common good'. However, the philosopher can still take part in civic life and intervene on behalf of those who ask for help. Proclus appeared in public meetings, and dealt directly with city officials. He not only pleaded with them but also, as Marinus puts it with restrained pleasure (15), 'by exercising the philosophical freedom of speech (*philosophôi parrhêsiai*) he obliged them (*prosanagkazôn*) to treat everyone properly'. Setting a personal example of temperate living is another influence. The multitude can see philosophers practising what they preach. When enemies' hostility and events come to endanger the philosopher, it is for the best to leave for a certain period, and take advantage of travelling to foreign lands to expand one's knowledge (on his trip to Lydia, see below). Armed with his considerable authority, Proclus found one more channel to influence the high and mighty both in Athens and abroad: the power of the pen. In this manner, he is said to have helped many cities (Argos is cited) and peoples (*ethnê*).

However, for the vexed question of whether imperial and metaphysical hierarchies had any substantial ties, we must turn again to Julian. In a 'Letter Against the Galileans', he denounced the Christians for not belonging to the natural order of things because they have cut themselves off from their Jewish origins, and promote newfangled faith. Thus he reveals what he regards to be the natural order and gives us a unique insight. Here the Roman monarch deliberately links the metaphysical hierarchy with the religious and with that of the state: the first is the foundation for the rest. He uses a typical late ancient solution to unity–diversity, based on Plato's *Timaeus*. The Creator (Demiurge), who is 'the Father and King', contains in one the perfections of all things. When things are distributed to the 'particulated' world, they become diversified and come under the power of different principles which rule their appropriate lot. This Neo-Platonic theory we also find in Proclus, especially when he compares the Forms in the Creator's intellect to the notions of public offices in the mind of a statesman. The governor comprehends them as one underlying thought, but outside his mind the officials and their duties are very different: the general, chief taxman, public executioner.[11]

Proclus' world was in transition.[12] In the attempt to manage the demands made on the empire, the traditional landmarks that were still evident in the time of Neo-Platonism's first founder, Plotinus (204/5–70), were gradually abandoned. The provinces constantly undermined Rome's central authority: they were the main strategic and logistic centres of the empire. Rome could not hope to defend both the eastern and western borders either from invasions or insurrections.[13] The legions were designed primarily for controlling well-defined centres of power, such as cities and fortresses, and for winning pitched battles, not for chasing raiders or for opposing the demographic movement of whole nations. So, for the purpose of administration the empire was split into two, then reunited by Constantine when it proved too divisive, then briefly split again, then united once more under Julian, and finally split irrevocably into the Western and Eastern divisions, which are felt in Europe even today (especially at the boundary between Croatia and Serbia, which both sides proclaim as significant).

Greek philosophers had been preoccupied with unity–diversity since the Presocratic times, but the Neo-Platonists' particular treatment of it from Iamblichus (fourth century) onwards has common themes with that of the late Roman emperors, especially Constantine and Julian (also fourth century), the two unifiers. Both the philosophers and the rulers dealt with a highly-organised superstructure that contained much diversity: the universe (as they conceived it) and the empire respectively. That the solutions which they produced were similar is not surprising, not only because of the long-established idea that the state must reflect the natural order of things. A hierarchical arrangement, a system of graded priority in a multi-layered whole, is an obvious solution to the problem of unity–pluralism, whether in philosophy, religion and science, or in government. Proclus' world, the late Roman Empire, was such a superstructure. It had unity in government, citizenship and economy, and standardisation in public offices and works. It had limited diversity in education (Latin and Greek), and wide diversity in geography, race, customs and religion. It was no longer composed of discrete elements, and so unity–pluralism was an acute issue. The pressures against its integrity were internal strife for political succession, external threats from other superpowers (the Persians and the Huns), and mass influx of refugees and economic immigrants (the Germanics), who were often violent. In these respects, the problems of Late Antiquity have a perennial value. Many historians and politicians have found them relevant to major contemporary changes. Gibbon, the author of *The History of the Decline and Fall of the Roman Empire*, was himself also a parliamentarian, and well acquainted with leading eighteenth-century Americans. He wrote the history during the American Revolution, and the shifts of mood seem to follow the perceived effects of the War of Independence on the British Empire. He was certainly not short of lessons for his contemporary readers, especially about the enemies of the Enlightenment: pagan and Neo-Platonic superstition, and Christian religiosity. More recently, the historian Michael Grant in *The Fall of the Roman Empire: A Reappraisal* (1976) drew attention to the sinews that held such a multicultural society together and concentrated on how unity could become authoritarianism, and diversity fragmentation and dissent. He wrote the book on the invitation of Walter Annenberg (former US ambassador to Britain), who wanted to see Gibbon's history assessed in a modern perspective, and it contains prefatory remarks on the state of modern America and Western Europe. Since then, events seem to have made the dilemma even more critical. 'Unity', 'diversity' and their appropriate scale of civic values appeared as the key themes of an American Presidential inaugural speech (George Bush, 1989). The Russian Federation is facing similar problems, while the rise of regionalism and global trading conspire to make it the central issue of the approaching twenty-first century.

Proclus' world was different from the Greece and Rome of textbooks. After Gibbon's grand history, the entire period from the third century until the coming of Islam in the seventh has been stamped with the gloomy but catchy label of decadent Roman Empire. The application of Darwin's theory of animal evolution to human civilisations (something of which Darwin himself disapproved) later gave it a scientific veneer: the lumbering Roman Empire was supposed to have perished like the cold-blooded dinosaurs. But human institutions are not independent living creatures; only their human members are. Nor do the psychological variants on the decay theme carry conviction under scrutiny. Surely individual people in Late Antiquity were not especially in mental anxiety or crisis any more than in any other 'period' before or since. Such views are misleading, if not mistaken. Transition from a central, Roman, to provincial, barbarian rule, away from a Mediterranean-based economy, is the key to understanding what happened in the Western, poorer half of the empire. The Eastern, richer half not only did not fall in the fifth century but continued for another 1,000 years. It 'liberated' Italy and Rome itself and held them for more than three centuries – no evidence of a civilisation in decline. For an empire in supposed decline, it lasted longer than in its so-called Golden Age (from the first century BC to the second century AD), despite more numerous and formidable foes. Moreover, after Diocletian's reforms, the empire was more stable than it had ever been. For example, in the 'top ten' longest reigns, the first place is occupied by Theodosius II and the next six, bar one, by fourth- and fifth-century AD emperors, who increasingly were allowed to die of natural causes. Of the 'Golden Age' emperors, the first, Augustus, ruled almost as long as Theodosius II, while Tiberius and the Antonines are in the bottom three places.[14] Secondly, although the Western half may be said to have fallen, the Eastern was reborn in its Greek heritage and until the thirteenth century was still a great world-power, envied as an awesome model of civilisation. Thirdly, even in the West, Roman culture did not perish with the coming of the barbarians, except perhaps in the British Isles. The 'barbarians' were changed by the Romans in much the same way as the Romans had been changed earlier by the Greeks. The Romans themselves were generally readier to adopt foreign ideas, for example, in education, religion and warfare. Because of this living cultural transformation, Europe shares a common vocabulary and common institutions.

The late Romans also resorted to further diversification. One compelling example of this was the reorganisation of the army. Vegetius, an early fifth-century Western Roman military author, and many historians since, have blamed the late Roman army for the decline and fall of the ancient world. However, on close inspection, a different picture emerges. First, much of the blame had political roots, in antagonism of traditionalists versus innovators versus pragmatists. Secondly, much of the military decline, especially in the West, was due to factors outside strict fighting ability, such as the fall in logistics. The Roman army still maintained a strong legionary force but were now made permanent frontier guards. Detachments, with new troops raised for the purpose, formed the field army, the 'companions' in the direct service of the emperor. Their main recruiting ground was Upper Gaul and Lower Germany, Rhaetia (modern Switzerland), Dalmatia and North Africa. The worldly-wise and world-weary Italians, Greeks and Southern Gauls were no longer prepared to die in faraway lands for the sake of the various Roman counts and dukes who aspired to the purple. They did everything to escape the draft, even chopping off fingers.

The fifth-century Roman legionaries were not the familiar heavy infantry with plate armour, but mobile troops protected by mail or scale, armed with long cavalry swords and expert at throwing long-range javelins and lead-tipped darts.[15] They advanced into battle carrying aloft a long wind-sock with a head in the shape of a dragon, and holding their huge oval shields locked in the old Roman legionary fashion, now called the 'shield-wall'. Adopted by the Anglo-Saxons, the dragon standard and the shield-wall made their last stand at the Battle of Hastings. The late Romans had all sorts of specialist regiments. The elite strike infantry were the 'Palatine' auxiliaries with no armour but equipped with long-swords, darts, bows, javelins or spears. Recruited mainly from peoples at the edge of the empire – Britain, the Rhine, the North Sea, and North Africa – they earned a reputation for fierce fighting. There were also recruits enticed into imperial service from the ranks of the Romans' enemies themselves, such as Irish and Anglo-Saxon pirates, Goths, Huns and Isaurians (from Asia Minor). The late Roman cavalry included Persian-style horse-archers and armoured horsemen with total rider and horse armour, the moving 'iron statues' (the precursors of the medieval knights). However, the most effective units seem to have been the light cavalry. Among them were the African 'Ferocious Moors'. Valued since the early empire, and now part of the regular army, according to the late Roman strategic record, the *Notitia Dignitatum*, they were stationed even in Gaul and in Italy itself. In Britain there existed an infantry unit of *Mauri* under the Duke of Britain. They guarded Hadrian's Wall at the modern Burgh by Sands, near Carlisle.[16] The fifth century saw two further developments: the increasing use of irregulars and unassimilated barbarians fighting under their own chieftains; and the introduction of armoured archers by the Eastern Romans, particularly armoured horse-archers. The first eventually lost the Western empire, but the second contributed to the recovery of parts of it for the Byzantines in the sixth century. In short, the late Roman army diversified. Evidence shows that it was at least as efficient as the early imperial army, if not more so, considering the multitude and variety of opponents that it had to face.[17]

By the fifth century, everyone was consolidating their own roots. In the West, central authority became shadowy and finally non-existent through lack of financial and military resources. Government fell into the hands of the local people: the landowners, the dukes and counts of the late empire, and then the chiefs of the Germanic nations who took over the Roman provinces and were given Roman titles. At Byzantium, the New Rome, the Eastern emperor consolidated his own position as the absolute and eventually the sole monarch. He was at the head of a highly-structured state hierarchy whose classes in order of rank or dignity were: the Illustrious (the consuls, the patricians, the masters-general of the army and the palace ministers), the Respectable (the vice-prefects or vicars, the counts and dukes) and the Dignified (the proconsuls and presidents of provinces). Below them were to be found the emperor's 'agents', his eyes and ears, and the various military and civil ranks. They, with the ordinary people, were classed as 'subjects' of the sovereign, the peasants being tied to their farming land, as the professional classes were often tied to their particular profession.

In this context, Proclus and many pagan 'Hellenes' simply adhered to their own cultural and intellectual roots: classical education, philosophy and religion. Besides, philosophy provided its own consolation, as the Christian Boethius discovered and wrote in the sixth century. Greek culture was more than the comforting worship of traditional and local gods. Above all, it provided learning and access to civilised life. In this respect, Hellenism transcended the boundaries of religion and nationality, and united the educated. The teachings of Proclus and the Neo-Platonists were the dominant philosophy of the period. More than that, the Neo-Platonic Schools were the centres of advanced education, and so touched every learned person, irrespective of their faith, politics or race. Thus in the history of Late Antiquity it is not strange to see, on the one hand, fierce struggles fuelled by polarised religious affiliations among different Christian sects, pagans and Jews, but on the other a widespread receptiveness to Neo-Platonic ideas.

If the theme of unity–diversity may be said to distinguish the Hellenistic from the Classical Greek period, similarly it can be said to distinguish Late Antiquity. If in the third century BC Alexander the Great had prepared the ground of one-world under one god-like ruler, so in AD 212 his pathetic imitator, the Roman Emperor Caracalla, unconscious of the wider effects of his actions, ushered in a similar advance in universal franchise. He extended Roman citizenship to all free inhabitants of the empire from Britain to Arabia, from the Alps and the Danube to Africa, and from the Atlantic coast to Syria, and decreed universal conscription. Although this was not done for humanitarian but for purely financial reasons – the emperor could now raise more taxes – it did have a radical social effect. The empire became one world. Many marriages and offspring were now regularised, especially those of the soldiers at the frontiers. More importantly, the status of innumerable people with an interest in the empire, such as the auxiliaries and the cavalrymen, was upgraded immediately. This in turn meant that anyone, however lowly or non-Latin, could be promoted to the highest ranks and to the purple – and they were. Caracalla's greatest hero was Alexander the Great. Caralla called himself 'Alexander', formed a Greek Guard regiment as a phalanx, and, because he misconceived Aristotle's involvement in Macedonian politics, he went on to persecute the Aristotelians and ordered Aristotle's books to be burnt.

The late second and early third century was culturally and intellectually an exciting period. The Aristotelian Alexander of Aphrodisias, the Christians Clement, Tertullian and Origen, and the Platonist Ammonius Saccas flourished at about this time. Plotinus first went to study at Alexandria (in 232) with teachers who 'then had the highest reputation'. However, as his biographer vividly describes, 'he came away from their lectures depressed and full of sadness' (Porphyry, *Life of Plotinus*, ch. 3). A friend advised him to seek the free philosopher Ammonius Saccas. When he listened to him, he exclaimed: 'this is the man I was looking for'. Plotinus tuned in and dropped out. Ammonius was also the teacher of the Origens (the

Christian and another pagan) and Longinus. Judging from secondary reports, he seems to have taught Platonism, Pythagoreanism and possibly Aristotelianism, a mixture which was common in that period. Eleven years later, Plotinus embarked on a trip to Persia and India in search of wisdom (a pattern similar to the biographies of previous sages). His host, the Emperor Gordian, was murdered, and Plotinus escaped with difficulty and had to return. Later he settled in Rome, in a period of lull between civil wars. There he began to teach his own Platonic philosophy, which, as his biographer Porphyry was quick to discern, 'was full of concealed Stoic and Peripatetic doctrines'. At his circle, they also studied from (Middle) Platonists, such as Severus and Atticus, from Aristotelians, notably Alexander of Aphrodisias, and from the Neo-Pythagorean Numenius, whose doctrines Plotinus was once accused of plagiarising (Porphyry, *Life of Plotinus*, ch. 13). Plotinus became so influential that on his suggestion the Emperor Gallienus contemplated building a 'Platonopolis', a retreat for his followers, many of whom were Senators. Plotinus died two years after the assassination of his patron, by which time his group had already scattered. Amelius turned increasingly to theurgy, and went to Apamea in Syria, where in the second century there had flourished the most prominent Neo-Pythagorean, Numenius.

Born of Syrian parents, Porphyry (232–c. 309) continued to develop his brand of Platonism with new ideas, notably the 'harmonisation' of Aristotle with Plato. He was also the first to cite the so-called Chaldaean Oracles. More importantly, he compiled Plotinus' doctrines in the form that is famous, the six 'Enneads'. In Porphyry we see a more scholarly approach, which left its mark on all subsequent Neo-Platonism. This he owed to his teacher Longinus, with whom he studied at Athens before he went to Plotinus in Rome. As for the exegetical, scholastic methods, they may be traced from Longinus to the second-century Middle Platonist Atticus, who flourished when the hellenophile Roman Emperor Marcus Aurelius established Chairs in Platonism, Aristotelianism, Stoicism and Epicureanism at Athens (see below). This line of descent would explain why Proclus (and later Simplicius) draw their references on Atticus from Porphyry. Plotinus and Porphyry are also the principal sources of the developing Latin Neo-Platonism (Marius Victorinus, Augustine, Boethius).

Gallienus' death triggered yet another fight for succession, in a manner all too familiar in Roman history. This time it was to last twenty years. Chaos and famine reigned across the empire while armies fought each other relentlessly, elevating and assassinating emperors at the rate of one a year. The tribes of the northern lands, strengthened by new confederations and invigorated by the Goths, found the frontiers thinly guarded and stormed through, one reaching Rome itself. In Africa, Moors and Sudanese raided the granary of the empire. Greece suffered similarly, Athens being saved only by a local militia. Worse still, a new Persian Empire, the Sassanid, rose in the East. It was fiercely militaristic and united with one faith, the religion of Zoroaster: the ancient keeper of the Eternal Flame who guarded the Light from Darkness. Whole regions ceded from Rome's central control to become individual empires: the Gallic, British and Palmyran (in the east). They were subsequently reintegrated, but the seed of fragmentation had been sown. In the second half of the third century, historical documents become confused or disappear, and with them we lose sight of a crucial period in early Christian history.

Nevertheless, the empire did not collapse. The rebels were executed and the barbarians pacified. The saviour was Diocletian. For the Christians, he was the devil who instigated the most efficient persecutions of all. Together with the Christians, Diocletian persecuted all strange and occult cults. What he was doing was systematically stamping out every form of dissent that might have threatened the unity and solidarity of the empire. To this end, social immobility was made the servant of state stability, a rule which had its parallel in Plato's *Republic* (434ac). Building on Emperor Aurelian's title 'Lord and God' (274), Diocletian declared himself god while still alive, and the emperor became for the first time an absolute ruler. He took the title of Augustus, but was no longer the 'first citizen'. He was *Dominus noster*, 'our Lord'. Diocletian also wanted to produce a reliable machine for succession. There were to be not one emperor but four, two senior and two junior. Bonded by reciprocal marriages and common religion, one would smoothly succeed another.

The fourth century dawned with Diocletian's retirement in Dalmatia. Constantine, later to be surnamed the Great, overcoming his initial caution, marched from Britain and, after a series of campaigns, crushed his colleagues. He made Diocletian's reforms irreversible and added his own. He distinguished frontier from field army, and diluted potentially rival concentrations of power by separating the civil from the military authority. He added another tier of provincial government and made Rome just a municipality. He built a second capital at Byzantium, in the Greek East, and gave it his name, Constantinople. Above all, he established absolute monarchy by divine right. When the Franks, Germans, Anglo-Saxons, Goths and Huns came, this was the Roman Empire they saw.

Constantine, however, is more famous for his patronage of Christianity. He legitimised and organised it; it was made the state religion in 380 by

Theodosius I. With it came the first persecutions of 'heretics'. For philosophers, 'heretic' (from the Greek for 'choice') denoted someone following a certain school of thought or teacher: for example Plato, Aristotle, Plotinus. Many religious heretics left the empire: some went off and proselytised the Goths, others fled to Arabia, while yet others reached India and even China.[18] On the whole the Christians were still in the minority, especially among the aristocrats and the professionals. Christians mingled with 'Pythagoreans', with followers of the Great Mother and Mithras, of Isis, and of the traditional gods Jupiter, Athena, Apollo, Venus and Hercules, and with the Jews, Samaritans and Gnostics. This might have remained the situation had not the later Roman emperors intervened for the Christians and against non-Christians, the pagans and the Jews.

During this time of religious and intellectual cross-fertilisation, there flourished Iamblichus (c. 242/5–c. 326), who was descended from an ancient line of Syrian priest-kings. Iamblichus, along with Porphyry, can be counted as more immediate founders of Neo-Platonism. The biographer Eunapius of Sardis is one of the sources on Iamblichean Neo-Platonists. Iamblichus taught at Apamea, where recently a large villa with mosaics on philosophical themes was excavated by Jean and Janine Balty. According to one interpretation,[19] the mosaic themes show the coexistence of a rhetoric and a philosophy school. Iamblichus' most underrated contribution is the Neo-Platonic curriculum (of which more in Chapter 2), which flourished until the end of antiquity and was transmitted to Byzantium. He is credited with the introduction of the rich metaphysics and psychology typical of (later) Neo-Platonism, including number-metaphysics (traceable to the second-century Neo-Pythagoreans Numenius and Nicomachus). He seems also responsible for the introduction of theurgy, which can be variously translated as 'divine-working', or 'operating on the gods'. So, to modern eyes, Iamblichus, like most of the later Neo-Platonists, appears as a disjointed personality: the one side is concerned with the mathematisation and rationalisation of the universe, and the other with occultism. Proclus (*In Tim.*, 1.19.9; 1.426.5: Iamblichus as *hypsêlologoumenos*) and Damascius (in Simplicius, *In Phys.*, 795.16) thought that Iamblichus had his head too much in the clouds, while they respected him as 'divine'. Still, we can also see this polar attitude to the workings of the cosmos in the seventeenth-century scientists Kepler and Newton, so such assessment has to do more with our anachronistic view.

After Constantine, struggles for succession continued among his kin. Imperial power passed again from one to many. With the two capitals, ancient traditions of a Greek East and a Latin West reasserted themselves.

However, the polarisation was briefly arrested when Constantine's nephew, Julian II, found himself sole emperor on the death from natural causes of his rival 'Augustus' in 361. What Constantine had been to the Christians, Julian became to the pagans. He travelled the length and breadth of Greece and Asia Minor re-establishing the sects and the Mysteries. He also prepared to rebuild the Hebrew Temple of Jerusalem. Advised by Neo-Platonists, among them Maximus of Smyrna who had been a disciple of Iamblichus, he aimed to organise all the cults into one body with a hierarchy of pagan priests. The God above all was to be the God of Light, the Sun God, with his Great Mother. Naturally, for the Neo-Platonists he was their greatest hero. Marinus (*V. Procli*, 36) shows us that they counted the years from Julian's accession: 'After Julian'.[20]

Julian died in battle against the Persians in 363, and power was split again between Christian emperors. In the East, Valens took over, but his authority was challenged by the pagan Procopius, a relation of Julian's, who claimed that Julian had invested him with the purple. His revolt was brief. Nevertheless, we shall meet one of his descendants, a patrician who became emperor, later among Proclus' audience. Valens himself died at the battle of Adrianople in 378, when the Goths devastated the cream of the Roman field force, which was badly led. Ironically, soon afterwards, the same Goths became the strike force of Theodosius I, the zealous Christian emperor of the East, when he destroyed the Western army of the still-pagan Rome in 395. He set the precedent of allowing unassimilated foreigners under their own leadership to settle in the empire and enter the army. Theodosius was the one who turned the tide irrevocably in favour of the Christians. He forbade the worship of gods and closed or destroyed their temples. In Alexandria, Christians fought with pagans, who were led by the Neo-Platonist philosopher Olympius. In the ensuing carnage, the Serapeum was demolished and the Library severely damaged. Finally, Theodosius separated the empire irreversibly into two. During this period, both Neo-Platonism and Christianity attracted learned interest. The most famous student of both is Augustine of Hippo. The Cappadocian Fathers (for example Basil, Gregory of Nazianzus and Gregory of Nyssa) were the prominent figures of the emerging Christian Neo-Platonism.

The fifth century, Proclus' time, begins with the coming of the Germanic barbarians in the West, and their expulsion from the army in the East. The Byzantines looked for recruits in the wilds of Asia Minor and the Black Sea. Roman central authority in the West dissolved amid continuing civil war and impoverishment. When the Vandals were allowed to cross to North Africa because of petty rivalries, the Western empire lost its source of both grain and soldiers. Rome gave way to Rome Celestial.

The soldiers followed the local leaders, whether Roman dukes and counts or barbarian kings. Most farmers found better protection as serfs to great landowners. Those who could not abide it, or were dispossessed, became bandits, *bacaudae*. Often they were sufficiently organised to control whole regions, even to strike coins. This was the beginning of feudal society.

By contrast, the East enjoyed stability and prosperity. There was a period of anxiety when the Huns broke through first to Byzantium, where they were held back at Gallipoli (443), and then to Greece itself, where they were repulsed at Thermopylae (447). Attila seems to have been paid off, and he moved on to the West. Urban population grew, and with it came a demand for the finer things in life. The arts flourished, with colour and symbolism, which did not appear again until the Renaissance. Vivid wall-paintings, expressive portraits full of individuality, multi-coloured marble sculptures and mosaics are characteristic of the fourth and fifth centuries.

Education expanded vigorously. Intellectual and educational centres at Athens, Alexandria, Pergamon, Gaza and Constantinople welcomed privileged youth from the empire. There they sampled not only Greek learning but also a sense of freedom. As a result, there were often troubles between town and gown, and between rival groups of students called *tagmata*, squads. There were the Christian God-squads, the pagan and the Jewish.[21] Christianity was still patchy in Greece, especially at Athens, which was looked upon as pagan by Byzantium. The Emperor Theodosius II issued several edicts against pagans. Further, the hereditary spiritual leadership of the self-governing Jewish community came to an end in 429, and was discontinued. Theodosius introduced the first major revision of Roman law, the *Codex Theodosianus*, the precursor of the more famous Code of Justinian. In his reign, the Council of Ephesus (431) took place, in which Jesus Christ's fully divine and human natures were debated and confirmed at the Council of Chalcedon (451), only to lead to further heresies stimulated by the application of philosophy to religion. Theodosius II died in 450, in the middle of Proclus' tenure. Proclus outlived three other Eastern emperors, Marcian, Leo I and Leo II (who all died of natural causes). It was during the reign of the next emperor, Zeno, that Rome fell and Italy became just another Germanic kingdom. The symbols of Rome's ancient authority were sent to Zeno with the decree that Byzantium should now be the sole seat of universal empire.

3. ATHENS AND THE NEO-PLATONIC SCHOOL

Athens was still a university town, as it had been throughout the Roman period. From the letters of Synesius of Cyrene we have a striking, if weary, view of Athens around the beginning of the fifth century. Synesius is a typical example of a world in transition. He began his colourful career as a pagan philosopher, impressed by his teacher Hypatia, and ended it as bishop of Cyrene and lobbyist on imperial policy for the expulsion of the barbarians from the Eastern empire. He describes how in Athens the supply of freelance teachers and philosophers exceeded demand, and they cajoled students with pots of Hymettus honey. Interestingly, Synesius mentions two 'Plutarchs'.[22] It is likely that the one is the Plutarch of the philosophical school, and the other the head of a school of rhetoric.

In philosophy, the Platonic School alone still functioned and prospered. It had begun to call itself the 'Academy' in an effort to rekindle a link with the original institution founded in the fourth century BC. However, Plato's Academy, Aristotle's Lyceum and other classical centres had been destroyed in 86 BC during the sack of Athens by the Roman consul Sulla. So the Neo-Platonic Golden Chain of Succession was metaphorical, and had to do with the transmission of revealed truth from an ancient divine source (e.g. Orpheus) to select philosophers – a chain that included Pythagoras, Plato et al.

The title 'successor' was earlier borne by the imperial Professors in Philosophy, whose Chairs had been created by the Emperor Marcus Aurelius (second century; known for his Stoic 'Meditations'). He had endowed four Chairs: in Platonism, Aristotelianism, Stoicism and Epicureanism. The university town had already benefited by another Antonine emperor, Hadrian, who had donated a great library. Some of these eminent Professors included Alexander of Aphrodisias (Aristotelian) and Atticus (Platonic). Alexander was particularly important to late Platonists. He undertook to bring Aristotle's doctrines into a cohesive system. When he focused on the problematic active intellect (*nous*), he surmised that intellect has God as its object of thought, and is identical with God. Later, Platonists (Plotinus) took it as a solution to the problem of where the Forms are as objects of thought: they must be in the divine Intellect. By the end of the second century, and certainly by the third, the Chairs had passed away with the imperial funds. Yet by some scholastic tradition the honorary title seems to have been maintained, for we have Porphyry naming 'Platonic successors' at Athens, whom he regarded as unimaginative teachers without decent research publications.[23] In any case, by the fourth century, if not earlier, independent Aristotelianism and Stoicism had expired, and Epicureanism had been rejected.

The city itself had survived two violent invasions: first by the Heruli (in 267), when the city and its library were saved only by a local militia; and then by Alaric and the Visigoths (in 396), the very same who went on to sack Rome. The School of Plutarch, Syrianus and Proclus brought prosperity in both scholarly reputation and wealth. Neo-Platonism offered higher education and positive spirit, and the School had become entirely self-supporting. This had been achieved through a series of recent benefactions from the estates and investments of its scholarchs and the endowments given to it by the aristocratic families. Its wealth seems to have been considerable: Proclus, as a 'Successor', received an income of 1,000 gold *solidi* a year. The *solidus* (literally 'solid-bit') was the only coinage that had kept its value through the huge inflation of the third century, mainly because it was the coin of the imperial authorities and the army (hence the word 'soldier'). For the purposes of comparison, that amount was the annual pension given to a chief palace minister who had fallen slightly on hard times (allowing for the purchasing power of the *solidus*, the modern equivalent would be roughly £300,000 or $500,000).[24]

Archaeological excavations in 1955 revealed a great house of that period near the Acropolis. Topographically, it fits Marinus' description of the location of Plutarch's and Proclus' house. Articles of pagan worship abound, including part of a statue of Isis and a shrine of the Great Mother. Fragments of philosophical inscriptions were found in the vicinity. At least 32m (105ft) wide and paved with intricate geometrical mosaics, the house was too large and opulent to be just a normal residence. There is some evidence that it had been enlarged, perhaps during Proclus' time. It contained living chambers and rooms and a hall suitable for teaching. Thus, it has been suggested that it is to be 'Proclus' House'.[25] But this has been challenged.

This private wealth of the Neo-Platonic School, the pagan beliefs of its professors, and the usual problems associated with the presence of a high-status university in an otherwise low-status town, must have made life full of friction, which demanded the utmost diplomacy. Proclus fared rather well. There is only one recorded instance of his taking a year's sabbatical in Lydia, Asia Minor, and applying the Neo-Pythagorean rule 'live unobtrusively' (lathe biôsas) (Marinus, V. Procli, 15),[26] until, as he put it, 'some god freed me from those many unending troubles' (Proclus, *Hyp. Astr.* proemium). His return may be associated with a theurgic dream in his fortieth year (*V. Procli*, 28), and seems to coincide with Theodosius' death in 450. At some time after that, Proclus witnessed the removal of Athena's statue from the Parthenon (not to be confused with the statue of Athena Promachus in the open Acropolis), when Athens was being stripped of its monuments to adorn Byzantium. The story goes (*V. Procli*, 30) that the disturbed goddess appeared in Proclus' dream and asked him to prepare the House 'because the Lady of Athens wishes to come to live with you'. Yet, he continued to practise his religion not only at his place of work but also at the public temples, which imperial decree had ordered to be closed (in 435). Athens was still predominantly pagan.[27]

Proclus' religious pantheon included, according to the general syncretic tendencies of Late Antiquity, not only the Hellenic but also the Egyptian (Isis), Chaldaeo-Babylonian, Arabic and others. 'It is not befitting to the philosopher', he is quoted as saying, 'to worship at one temple only, either of his own town or of his native land, but he must be a minister of the whole world in common' (Marinus, *V. Procli*, 19): divinity takes many shapes and forms, but there is one divine nature common to all.

Proclus had an acute sense of responsibility both for the people in his charge at the School and for the people of the city, according to the ancient virtue of 'caring for one's city' (*philopolis*). Marinus mentions how he often helped them directly or interceded with officials or prayed for their welfare, even calling for rain to fall during a severe drought, in which, as a good theurgist, he was naturally successful. He was an inspiring lecturer. Marinus records one occasion when a government official 'came when he was lecturing, and saw a light circling his head. When the lecture finished, he got up and bowed before him, swearing that he had seen this divine vision' (*V. Procli*, 23). People flocked to Athens from all over the empire to hear him speak or to become his disciples. A list derived from many sources includes attendants from Alexandria, Pergamon, Antioch, Judea, Egypt and Syria and high-ranking dignitaries from Byzantium and Dalmatia.

One such dignitary was a patrician from Byzantium who was the son-in-law of Marcian, the future successor of Theodosius II. He bore the distinguished name of his maternal grandfather, Anthemius, the praetorian prefect who had been the Regent of the Eastern empire when Theodosius was an infant. Most histories know him solely as that. His full name, however, was Procopius Anthemius. Procopius was the name of his father, a military officer elevated to the rank of general and patrician. He was descended from another Procopius, the relative of Julian II, the champion of the Neo-Platonists and pagans in the fourth century. Procopius Anthemius was groomed for the purple. To the disappointment of his father-in-law, he was given the imperium of the West and not the East. He went to Rome with his close friend Flavius Severus, a philosopher and future prefect of Rome, with whom he had attended Proclus' classes at Athens. Shortly after their arrival in Rome, in the words of Gibbon, drawing on Damascius' *Life of Isidorus*,

> some suspicious appearances are found to sully the theological fame of Anthemius . . . he had imbibed the spirit of religious toleration;

> and the heretics of Rome would have assembled with impunity, if the bold and vehement censure which pope Hilary pronounced had not obliged him to abjure the unpopular indulgence. Even the Pagans . . . conceived some vain hopes, from the indifference, or partiality, of Anthemius; and his singular friendship for the philosopher Severus, whom he promoted to the consulship, was ascribed to a secret project of reviving the ancient worship of the gods.[28]

Procopius Anthemius' behaviour and pedigree provide a glimpse into the pagan undercurrent that must have existed in the highest of circles in an officially Christian empire. A tentative but tantalising case is the Empress Eudocia. In circumstances that remain obscure, she was forced to withdraw to Jerusalem (443), where she died twenty years later, amid her large collection of Christian, Greek and Roman literature. In it can be found Proclus' hymns to the pagan gods and citations of his (now lost) books to Orphic and Great Mother theology.[29]

We discern the political role of pagans in the empire even in late fifth century. In 484, a year before Proclus' death, the Roman East was in the midst of a revolution. This was the third time that Zeno's rule was challenged. In 476, Basiliscus, the brother of Zeno's mother-in-law Verina, became briefly emperor. In 479, Procopius Anthemius' son Marcian (not the earlier emperor of the same name), who was also Verina's son-in-law, had contested the purple. The rebellion continued in 482 with Illus, the Master of the Eastern army, who first made Anthemius' Marcian Emperor but then allied with Verina herself. In 484, Illus raised Pamprepius to the post of a principal palace minister. Pamprepius was a leading pagan Alexandrian Neo-Platonist, who had studied at Athens under Proclus. Through him many pagans joined the challenge to the throne, convinced by numerous predictions that they would succeed, and that the 'Hellenic' religion would be restored. Before the year was out, however, Zeno and his Ostrogoth allies had won. Pamprepius tried to defect, was executed by his patron, and was denounced as a traitor by his pagan followers who suffered persecution. Although the philosophers were wise enough to foresee the failure of the venture and did not publicly join, Zeno descended on them because of their prominence. Isidorus, an Alexandrian and future Head of the Athenian School, turned fugitive when the imperial secret agents suspected him of conspiracy after they had captured the messenger carrying his letters in which he forewarned other philosophers.[30]

Proclus lived to the grand old age of 75.[31] In the last five years, he seems to have suffered from debilitation due to a brain disease (*V. Procli*, 30;

perhaps a softening). Proclus himself felt that his intellectual life lasted until his seventieth year. He was certainly burdened by a prophetic dream that he had had near the beginning of his career. When he had finished his five-year labour of collecting the various literature on the Chaldaean Oracles, the deceased Plutarch appeared in a dream and foretold that Proclus would live for as many years as his note-leaves (*tetradôn*, literally sheets of paper folded in four: a late Greek neologism that survives in modern Greek); they turned out to be seventy (*V. Procli*, 26). Marinus suggests that Proclus would have lived longer but for his obstinacy in keeping to an arduous work schedule and diet, and tells us how he spent his last days sleeping quietly or singing Orphic hymns. Orphism and hymn-making were part of theurgical 'elevation'. Awe and sorrow filled his friends and disciples, who were around him until the end, not least because, like Marinus, they must have appreciated that they and the School had been exceptionally fortunate in Proclus, and that things would never be the same again.

In the biography, 75 is the last of the cited ages, most of which coincide with numbers meaningful to Neo-Platonists in Proclus' circle. Marinus first tells us that Proclus arrived at Athens when he was not yet 20 and that he completed the studies under Plutarch in less than two years, namely at 21. He then completed the *Commentary on the Timaeus* and added the philosopher's 'contemplative virtue' at the age of 28 (*V. Procli*, 13). He reached the highest possible human virtue, the theurgic, in his forty-second year, when he uttered overtly oracular verses (*V. Procli*, 28). The ominous age is 70, when, on Proclus' evidence (*In Parm.* 683.20), Greeks traditionally considered a man no longer an elder (*presbyteros*) but just a geriatric (cf. Aristotle, *History of Animals*, 545b25: human males can be fertile until 70). In other words, it is the symbolical right time to finish the productive intellectual life. All these ages fall into a pattern of seven, a number steeped in (Neo-)Pythagoreanism. Moreover, 75 is itself highly meaningful. It is the age-limit for holding the top office of Examiner in the ideal state of Plato's *Laws* 946c. The two factors in calculating the number governing the human lifespan in Plato's *Republic*, VIII (546), are 75 and 100. Proclus in his commentary on this passage (*In Rep.* 2.19–70) expands on the Platonic-Pythagorean exegesis and informs us that these dimensions had been interpreted as indicative of the kinds of soul (and so linked to the creation of soul in the *Timaeus*, 35b–36e). Number 100 is the 'icon' of the separable, rational soul, but 75 is the 'icon' of the non-rational soul living in the realm of generation (cf. Aristotle, *Hist. An.* 545b: a horse can live until 75). It is, therefore, the symbolical right time for the completion of physical life. Marinus did not necessarily invent these ages, but selected the ones that approximated the meaningful. So Proclus need not have died after his seventy-fifth birth-anniversary but before it, during his seventy-fifth year. Thus I propose that he was born in 410/11, possibly in the first quarter of 411.

The given horoscope exemplifies the practical compromises made when the data of birth are not known.[32] In antiquity, as today, horoscopes were not normally cast by a direct observation of the overhead heavens, but from published astronomical tables. In Proclus' time, the authoritative ones were the *Handy Tables* of Theon of Alexandria. Celestial latitudes were divided into seven standard reference zones, of which one was based on Alexandria, another on Rhodes and the next northwards on the Hellespont (Byzantium). The horoscope in the biography uses the reference latitude based on Rhodes, (which is very near Xanthus) not on Proclus' birthplace. Further, several of the given celestial positions need emendations great and small to fall into a valid pattern. However, even after emendations consistent with astrological practices of the period have been applied, the sun, the moon and the inner planets do not match the positions given in the *Handy Tables*. Most importantly, the entire horoscope is the result of too many crude short-cuts. The perfectionist Proclus would never have allowed it to be associated with his name. All this leads me to conclude that the horoscope was drawn up after his death for the purpose of completing Proclus' hagiography: 'those who love the higher things may infer from the disposition of the heavens under which he was born how the lot of his choice (the 'sect') fell not at the end nor in the middle but at the very beginning' (Marinus, *V. Procli*, 35).[33] If it is not a medieval supplementation, I suggest that it was cast in Athens (whose latitude is closer to that of Rhodes than Byzantium) and backdated with some astrological rectifications. Whoever did it used Proclus' seventy-four anniversaries and the astronomical data at the time of the biography's (near-)completion (as honorary astrology). The horoscope may be a snapshot of 8 February 486, taken seventy-four anniversary years into the past: hence '412'. Full tables for so many years in the past may not have been available, so celestial positions were roughly extrapolated. This would explain the relatively low deviance for the outer, slow-moving planets, and the higher deviance for the swift-moving inner planets, the sun and the moon. A conjectural horoscope-casting did not merit refined computation and methodology. Thus the horoscope seems not to be a reliable source for the precise dating of Proclus' birth, but is useful for scrutinising the astrology meaningful to the Neo-Platonists, and for dating his biography.

Proclus was buried in a double tomb with his teacher Syrianus in the easterly suburbs of Athens, near Mt Lycabettus (*V. Procli*, 36). His year of death was preceded by a solar eclipse (14 January 484, shortly after sunrise), with another predicted in the succeeding year (19 May 486).[34] These objective astronomical events help us to pinpoint his year of death to 485. But, for his fellow academics, they punctuated 'the departure of the light in philosophy' (*V. Procli*, 37).

4. POSTHUMOUS DEVELOPMENTS AND INFLUENCE

Proclus' intellectual legacy dominated all subsequent Greek thought in Late Antiquity. Throughout the rest of this period, his students, and the students of his students, pagan and Christian, call him 'the great Proclus' (*ho megas Proklos*).[35]

After Proclus' death, Marinus of Samaria became the Successor at Athens, although he was by then quite old himself. He maintained the mathematical and scientific interest of the School (for example, in Ptolemy's astronomy and Euclid's *Elements*). It seems that Isidorus from Alexandria succeeded him; Damascius from Syria later succeeded Isidorus.

Several of Proclus' students became leaders. Asclepiodotus (the senior), to whom Proclus dedicated his *Commentary on the Parmenides*, left Athens and took up politics at the city of Aphrodisias, eventually becoming Senator (inscriptions to him survive). At some time, he is said to have taught Isidorus.

Ammonius, son of Hermeias, became Head of the Alexandrian School. Hermeias had been the first to introduce the Athenian teaching to Alexandria. His wife Aidêsia was a relation of Syrianus. When she was widowed, Syrianus had suggested a marriage to Proclus. Ammonius started to teach around 470 (until the mid-sixth century) and brought the Alexandrian School to its peak. His works are chiefly on Aristotle's logic and on the Neo-Platonic curriculum and the quadrivium, and tend to draw on Proclus. He also wrote a controversial defence of the eternity of the world. This 'Hellenic' stance was said to have been surrendered during a (hypothetical) disputation with the bishop of Mitylene, Zacharias. Historically, we know that Ammonius made a concession to the bishop of Alexandria, Athanasius II.[36] Survival must have been Ammonius' foremost motive, especially since the imperial agents had previously come to his School searching for conspirators after Illus' and Pamprepius' revolt (Damascius, *V. Isidori*, fr. 313, p. 249). Damascius, however, regarded it a result of Ammonius' 'sordid greed for gain' (*aischrokerdês*) and money-making attitude (Damascius, ibid., fr. 316, p. 251). It confirms that the Christians were more dominant in Alexandria than in Athens, and that Neo-Platonism was being adapted accordingly. Besides, the Alexandrian School was not financially independent, as the Athenian was, and relied on city grants and student fees. Ammonius' students included pagans, such as Isidorus, Simplicius, Asclepius, Damascius and Olympiodorus, and Christians, notably John Philoponus. Isidorus and his younger colleague and student, Simplicius, went to Athens.

Simplicius informs us of the extent and limits of Proclus' influence:

> Proclus, the guide of our teachers . . . Proclus' successors right up to our time have followed him not only on this but in all other matters. I except Asclepiodotus, the best of Proclus' students, and our Damascius, of whom the former, because of his extreme cleverness, delighted in novel doctrines, while Damascius, through love of work (*philoponian*) and through sympathy to Iamblichus, did not hesitate to reject many of Proclus' doctrines (Simplicius, *In Phys.* 795.4–17).

Damascius became Head of the Athenian School around 515. He satirised many philosophy professors, especially of Alexandria, for their superficial mind-games. He stressed sincerity in philosophical pursuit, and adherence to the transcendence of God. His works on the One draw largely on Proclus, but with important differences. Damascius was fiercely anti-Christian, and brought the Athenian School to a new peak. However, all this seems to have proved too much for the new Eastern emperor, Justinian, who was purging the remaining non-Christians from imperial offices. From AD 529, all public teaching by pagans was forbidden by imperial edict. This was the end of the Neo-Platonic 'Academy' at Athens.

Damascius, Simplicius and five other scholarchs left the Roman Empire altogether and sought to continue teaching at the Court of the Persian emperor at Ctesiphon. Nevertheless, things did not turn out successfully, and they returned. The end of the Athenian School is lost in the mists of history. Yet, like light breaking through clouds, shortly after the return of the seven professors, there began to appear major publications from Simplicius. From Simplicius' report in his *Commentary on Aristotle's Physics* (775.33) that Damascius had died, we can date it to about AD 537/8.[37] Simplicius wrote extensive commentaries on Aristotle's *Categories*, the *Physics* and *On the Heavens*, which are invaluable. Not only they preserve many Presocratic doctrines, but also convey a fresh understanding of matter, space and dynamics. Yet where was Simplicius at the time? For a long time we had no clue, save for the safe option that he had returned to the land of his birth, Cilicia. However, two further alternatives have been proposed.

Alan Cameron (1969)[38] has suggested that Simplicius returned to Athens and continued to teach privately. With the library of the School presumably still at his disposal, Simplicius was able to write so much about Greek philosophy over 1,000 years before, and could have maintained the chain of succession. This may account for the tradition that the seventh Archbishop of Canterbury, the Greek Theodore of Tarsus, studied philosophy at Athens in the seventh century. However, we do not know where he could have been in Athens, and archaeological evidence from the closest candidate, 'Proclus House', suggests that it was not reoccupied.

Michel Tardieu (1987)[39] uncovered topographical evidence which, when combined with references in Simplicius' *Commentaries*, point to a place in Syria, Harran, on the border between the Roman and Persian Empires. Harran, or Carrhae, is where Crassus, the Roman financier and politician who defeated Spartacus, was killed after suffering military defeat by the Parthians in 53 BC. It had a unique history. Being at the crossroads of civilisations, Babylonian, Persian, Greek, Roman and Arab, it had become the refuge for waves of 'heretics'. It took pride in itself as a place that had always been pagan, by contrast to Edessa, its nearest city and rival, which proclaimed its everlasting Christian allegiance. Some archaeological evidence suggests Platonic teaching at Harran at least until the coming of the Arabs.

If this is where Simplicius flourished as a devout pagan writing and teaching among fellow pagans, it would indeed be a remarkable end for the Athenian School. It may even provide an interesting link in the transmission of occult thought. The *Picatrix*, one of the most influential writings of Florentine Renaissance Neo-Platonism, is alleged to have been composed at Harran (by Arabs).[40] My objections are that, first, the evidence from Simplicius does not tie him physically and permanently to Harran, and, second, the synthesis of various pagan and occult Harranian material occurs about two or more centuries too late. The concrete evidence from Simplicius is twofold. He cites the calendars of different nations: the only geographical place where these meet is around Harran. Simplicius also records travel information that is consistent with the crossing of major rivers near Harran, en route to/from the Persian Empire. But the citing of calendars of foreign nations does not require that Simplicius lived physically at their crossroads.[41] As we have seen in Proclus' biography, Proclus heeded the days of worship of Egyptians, Babylonians, Arabs and others. So a pagan Neo-Platonist could easily be in Athens and keep a record of foreign calendars. The geographical information may confirm that Simplicius and fellow scholarchs passed through these places, but does not entail that he settled there. More importantly, had Simplicius flourished unhindered in a place so receptive to his beliefs, surely we would have heard much more emerging from Harran. When we do, it is around the 830s. The chief source of the *Picatrix* is a synthesis of hermetic, Gnostic, Middle and Neo-Platonic ideas mixed with daemonology, talismanic magic and Babylonian star-worship, quotations from known Arab Neo-Platonism, the *Ikhwan al-Safa*, and from a legitimate Harran-born Arab theologian and astronomer, Thabit ibn Qurra (seventh century), who flourished in Baghdad. All this has echoes of Neo-Platonism, especially the hierarchy of being, but is not indicative of a flourishing Greek Neo-Platonism, and the material magic does not agree well with Proclus' 'elevating' *Hieratic Art.*[42]

Back at Alexandria, Ammonius was possibly succeeded by a mathematician, Eutocius, and then by Olympiodorus. During his time, the Alexandrian School managed to escape Justinian's ban on pagan public teaching in 529. It escaped closure by a combination of self-censure and some political deal with the imperial authorities, probably at a local level. Another of Ammonius' students at this time was the Christian John Philoponus. With a deep concern for the truth-value of his Monophysite Christian religion, Philoponus rejected both the Aristotelian and the Platonic conceptions of the nature of the world. The universe is finite in time, having a beginning and an end according to the Bible, and is maintained by a power impressed by God. Rubbing salt into the wound, in 529, the very year of the end of teaching at the Athenian School, Philoponus wrote from Alexandria an extensive treatise against Proclus' arguments on the perfection and eternity of the world. It became the standard for the later Christian rejection of Greek thought. For this he was counter-attacked by Simplicius, who remained his most formidable critic. Nevertheless, through their common Neo-Platonic education (Simplicius denies that they met), they shared an antipathy to parts of Aristotelian science. Simplicius' and Philoponus' *Commentaries on Aristotle's Physics* and *On the Heavens* are largely rejections of Aristotle, and draw ideas from Proclus. They were read extensively by Renaissance thinkers to aid their own rejection of medieval Aristotelian science.

Olympiodorus' pupils and successors, (pseudo-)Elias, and David from Armenia,[43] accepted the authority of the Bible. Finally, a Stephanus seems to have been invited to a new 'Academy', the university school of Constantinople. Neo-Platonic teaching continued at Byzantium; however, some teaching continued at Alexandria itself, when the Arabs came in 642. Although a School persevered until the eighth century, in many ways this marks the end of the original Neo-Platonism and of Late Antiquity.

From the seventh century, the transmission of Proclus' writings and thought follows the route of other Greek works. Neo-Platonism was the first point of contact of Western European and Islamic thinkers with the Greek heritage. Neo-Platonism became, in effect, the summary and pinnacle of Greek thought. The situation in the Byzantine Empire was more complex. Although they had direct access to it – and the continuation of teaching of Neo-Platonic Aristotelian logic certainly supports it – 'Hellenic' (viz. pagan) religion and culture was too close and was shunned. Thus, it is often difficult to separate Proclus' Neo-Platonism from previous types of Neo-Platonism, and Neo-Platonism itself from Greek philosophy in general. What usually distinguishes a Proclean influence is his developed Iamblichean Neo-Platonism, an elaborate hierarchical system, attention to mathematics (especially as a bridge to God), his science, and dialectical argumentation.

On the Greek side, Proclus' writings continued to be read and argued for and against by Byzantine scholars. His system enjoyed long life, when it was adopted by a Christian writer under the pseudonym 'Dionysius the Areopagite' (Paul's disciple in Athens in the first century BC). He took Proclus' philosophical system, joined God the creator with the transcendent, adapted it to Christian doctrine, and made it the first coherent Christian theology of the divine Being and the spiritual worlds. The 'Dionysian' corpus was the *Celestial Hierarchy* (largely responsible for the diffusion to the West of the divine orders of Seraphim, Cherubim, etc.), the *Ecclesiastical Hierarchy*, the *Divine Names* and the *Mystical Theology*. To these were added Commentaries, especially those of the seventh-century Byzantine Maximus Confessor. The 'Dionysian' corpus had a dramatic influence, and the Orthodox Church was almost totally immersed in it. Later, in Western Europe, the Dionysian tradition influenced Catholic and Protestant theologians and the imagination of religious poets such as Dante and Milton.

In the eleventh and twelfth centuries, Byzantium experienced an upsurge of interest in things Neo-Platonic both natural and supernatural. Michael Psellus revived many of Proclus' controversial works, including those on theurgy and daemonology. The interest in Neo-Platonism was so strong that a theologian, Nicholas of Methone, felt that he had to issue a new refutation of the *Elements of Theology*. Proclus' influence continued unabated until the conquest of Constantinople by the Turks in 1453. The leading Neo-Platonist George Plethon fled to Italy, where he founded with the patronage of the Medicis the 'Platonic Academy' of Florence.

In the Islamic world, Proclus, or *Buruklus* as he was called by the Arabs,[44] was read extensively, for example the *Elements of Theology*, the *Elements of Physics* and the *Commentary on Alcibiades A*. Some fragments are still extant solely as Arabic translations, such as parts of the *Commentary on the Timaeus*. However, Proclus' influence was mostly under the name of Aristotle. In the ninth century, there appeared a compilation of Plotinus' *Enneads* and Proclus' *Elements of Theology* but attributed to Aristotle. When translated in Latin and passed on to the West, it became known as the *Liber de Causis*.[45] With the Aristotelian *Commentaries* of Simplicius and Philoponus, Proclus' works contributed to the birth of Islamic philosophy and science (e.g. Al-Ghazzali, Al-Kindi and Al-Farabi). Furthermore, the Neo-Platonic manner of 'interpretation' with its many 'levels of meaning' shaped the emerging examination of the Koran, later to become known as Sufism. Among the first Muslim Neo-Platonists were the Brethren of Purity.[46] The *Ikhwan al-Safa* show that they are closer to Proclus than to Plotinus, partly because they saw matter as a positive spiritual principle (not as evil) and partly because of their Hierarchy. They maintained Proclus' linking of mathematical objects and soul. The Brethren of Purity directly influenced many of the early Shiite sects of the ninth century, including that which later became known as the 'Assassins', and more generally the Isma'ilis. Above all, the *Ikhwan al-Safa* constitute one of the foundation-stones of Islamic theology.

Western Europe felt waves of different kinds of Platonism. There was the Latin Middle Platonism from Cicero, Calcidius and other Commentators on Plato's *Timaeus*. Plotinian metaphysics influenced Augustine and through him Roman Catholic theology. Porphyry added his distinct evaluation of Aristotle, whom he harmonised within Neo-Platonism. In the sixth century, Boethius, a Roman consul at the time of the Ostrogothic kingdom of Italy, wrote the *Consolation of Philosophy* while in prison awaiting his final sentence. Written both in prose and verse, the *Consolation* is full of Neo-Platonism. It became the most popular work on the human predicament in medieval Europe. King Alfred the Great, Chaucer and Robert Grosseteste wrote commentaries and translations of it. Boethius also composed Latin translations of the main texts of the Neo-Platonic curriculum, notably Porphyry's logic of the *Isagoge* (some argue that Boethius had also knowledge of Ammonius' texts) and treatises on the role of mathematics as a bridge between physics and metaphysics, which became the manuals of the medieval universities.

The two other influential Neo-Platonic treatises in the Middle Ages were the pseudo-Dionysian corpus and the pseudo-Aristotelian *Liber de Causis*. The *Liber* was rendered in Latin by Gerard of Cremona. From Duns Scotus to William of Ockham, debate on causality and being was fuelled by the Neo-Platonic compilation *Liber de Causis*. However, the Western European Scholastics, such as Anselm, Abelard and Albert the

Great, owe more to Porphyry's Neo-Platonic harmonisation of Aristotle. The pseudo-Dionysian corpus, along with other Neo-Platonic material, was translated and popularised by John Scotus Eriugena in the ninth century. 'Dionysius' became a popular saint when, in the ninth century, the abbot of St Denis promulgated his (mistaken) identification with the third-century St Denis of Paris. Thus the legend of Denis was revised, and spread rapidly through Europe and England. The Abbey of St Denis had been originally founded by the Merovingian King Dagobert I (seventh century). In the eleventh century, its new abbot, Suger, rebuilt it in a manner befitting its elevated status. The result was the first Gothic cathedral, built according to the Neo-Platonic divine philosophy and mathematical proportions expounded by Eriugena.[47] St Denis together with Chartres became the model for other cathedrals, such as Rheims and Strasbourg. Suger, and St Denis, enjoyed an illustrious history. With the banner of St Denis, the 'Oriflamme', the Crusades were launched.

The 'Dionysian' corpus also became the main source of inspiration of Christian mystics. The concept of a transcendent God and the procession from One to Three, and Many, had been central to Proclus' philosophy. With these insights before them, Christian luminaries such as Albert the Great, the 'Universal Doctor' (thirteenth century), Thomas Aquinas, Berenger of Tours, Bernard Clairvaux, John the Cross, Meister Eckhart and Thomas à Kempis sought to find the essence of God. In poetry, Dante's *Divine Comedy* follows the Neo-Platonic scheme of 'return', while its concluding vision of the Light Eternal is inspired by Neo-Platonism. Elsewhere, memories of the (Neo-)Platonic Ideal of love and beauty surfaced in the lyrics of the troubadours.

Eriugena was largely responsible for the dissemination of the occult kind of Neo-Platonism. Mixed with Jewish Kabbalism, it diffused through Islamic Spain and reached all those who looked for direct links between man, nature and God, particularly the heretics. In the twelfth century, a focus of this Neo-Platonic and Hermetic stream was the Court of the German Emperor Frederick II at the cultural crossroads of Palermo in Italy.

Light and light-related philosophy and science had, of course, been among the distinguishing features of Neo-Platonic thought. In the Middle Ages, this became 'light-metaphysics'.[48] The Neo-Platonists had always maintained the geometrical structure of matter. Robert Grosseteste (twelfth century) was influenced by Latin (Middle) Platonic tradition on Plato's *Timaeus* as well as pseudo-Dionysius, the *Liber de Causis*, and Arabic Neo-Platonic versions. Grosseteste identified the common corporeity of matter with self-divergent light, and proceeded to (re)discover the properties of geometrical optics, which he linked to physics and metaphysics. His subsequent formulation of optics led to the manufacture of the first pair of spectacles in the thirteenth century.

Grosseteste is also an example of the less recognised channel of Neo-Platonic influence: its Aristotelianism. The prime source was Porphyry's work on the *Categories*. Many modern scholars, however, tend to separate and polarise the two. Moreover, Neo-Platonists had established the scholastic form of teaching, formal lectures by presentation in standard questions and answers and seminars with standard texts. At the medieval universities (studying came under the authority of the priests), students would consider each problem in turn, construct arguments in favour and against, and debate on interpretation using rhetoric and logic. The session would end with a formal rejection of arguments contrary to the set answers. Such exercise of mind yielded conclusions that sometimes appeared to challenge canonical doctrine. A list of 'errors' finally appeared in 1277 and was condemned by the Roman Catholic Church. This, however, was not intended to prevent the study of God in the world and the importance of physical evidence.

Scholasticism, far from being the pedantic occupation of theologians, was the fermenting-ground of the New Science. It culminated in William of Ockham in the fourteenth century, and 'Ockham's razor'. In the previous century, the leading Scholastic was Thomas Aquinas (1225–74). Proclus' influences on Aquinas, and that of Neo-Platonic Aristotelianism, are a subject of vigorous debate.[49] Aquinas' philosophy of God and natural knowledge is said to draw on Proclus' ideas on the divine and natural inquiry. Moreover, Aquinas' famed 'scale of being', which is usually regarded as Aristotelian, seems to stem from Proclus' and pseudo-Dionysius' hierarchy. The 'great chain of being' was promulgated in the Renaissance, and preoccupied colleagues of Galileo, such as Buonamici and Mazzoni. In the history of science, it is further said to have influenced eighteenth- and nineteenth-century biology in the graded taxonomy of species and fossils. Aquinas' sources were the *Liber de Causis* and the 'Dionysian' corpus. More importantly, he had the new translations of Proclus' *Elements of Theology*, part of the Commentary *On the Timaeus*, the *Ten Doubts on Providence*, *Providence, Fate and Free Will* and *On the Existence of Evil.* They were done by his friend William Moerbeke, who was bishop of Corinth during the period of the Latin states in Greece. At that time, Plotinus and most of Plato were practically unknown in the Latin West. Indeed, Proclus studies owe much to Aquinas, for he was the first to identify Proclus as the true authority behind pseudo-Dionysius and the *Liber de Causis.*

In the fifteenth century, the Medicis were the new patrons of Neo-Platonists. The Renaissance was the time of the humanist Popes, and of Michelangelo and Leonardo da Vinci. Neo-Platonism, with its concepts of man as a small universe capable of reaching God, was in tune with the age that exalted human dignity. Marsilio Ficino and Pico della Mirandola were the leaders of the Florentine Platonic Academy. Their principal works drew on Proclus: Ficino's *Platonic Theology on the Immortality of the Soul* and Pico's *On the Dignity of Man*. They shaped thinking from theology and cosmology to the design of gardens, namely landscaping. With the outward spread of the Italian Renaissance, Neo-Platonism influenced virtually all leading Humanists, such as Erasmus and Thomas More. It contributed to the triggering of the Reformation.

New translations of Proclus' most powerful works, such as the *Commentary on the Parmenides* and parts of the *Platonic Theology* (by the fifteenth century) with Greek texts from Byzantium, influenced the Renaissance. In fourteenth-century Germany, Tauler, a pupil of Meister Eckhart, called Proclus 'the great pagan master'. A century later, a leading theologian, Nicholas of Cusa, felt moved to describe the *Commentary on the Parmenides* as the book best above all.

The Renaissance thinkers looked for ancient sources to support their dissatisfaction with the Aristotelian science taught since the Middle Ages. They read mostly the Proclean Neo-Platonist Commentators on Aristotle, mainly Simplicius and, to a lesser extent, Philoponus.[50] There they discovered ideas of force and locomotion, three-dimensional space and the mathematical analysis of matter. Such ideas became the standards of the New Science. They also read the *Commentaries* on Aristotle's logic, including those by Ammonius and Simplicius.

Art is perhaps the activity for which the Renaissance is most famous. Two aspects can be traced to Neo-Platonic influence. Symbolism and allegory had always been part of Neo-Platonic literary modes of expression. If 'everything is in everything, according to its capacity', as Ficino had now paraphrased Proclus' principal rule, then the visible levels reflect, or allude to, the invisible levels of being. Another is the invention of perspective. Artists such as Masaccio explored the visual applications of the concept of three-dimensional space delineated by light cones. Their art aimed to have also an ethical and pedagogic role: the visible manifests the invisible.

Such ideas spread from Italy to the rest of Europe. In Elizabethan England, intellectuals and statesmen, such as Philip Sidney, Edmund Spenser and John Dee (the court magus and proponent of the idea of overseas empire), popularised the Renaissance Neo-Platonic allegories of virtue, soul and spiritual love. The Queen became the natural focus of such values.[51] They helped to enhance the role of the sovereign as the heart and soul of the country. This, in turn, spurred speculations on the ideal society. Many 'utopias' begun to appear, including one by Francis Bacon, the Solicitor-General, Lord Chancellor, and author of the pro-empiricist 'New Organon'. (Some modern occultists have claimed that Francis Bacon was a reincarnation of Proclus,[52] perhaps because of the combination of law with philosophy.)

Sixteenth-and seventeenth-century Protestant movements arrived in many forms proclaiming a 'new age'. Ingredients included so-called ancient wisdom and mysteries, Christian mysticism, Kabbalistic symbolism, Neo-Platonic light-metaphysics, Pythagorean numerology, alchemy and astrology. They influenced the supporters of both the new and the old political order, who took the name Rosicrucians and Freemasons. The Protestant and Catholic civil war in seventeenth-century Germany triggered the first wave of revolutions in Europe. A participant in the English Civil War was Sir John Danvers. He introduced to England the Italian Neo-Platonic garden designs, near the present Chelsea Physic Garden in London.[53] Among those who were influenced by the idea of man's inherent divinity and by light-metaphysics were the German Jacob Boehme and inner-light movements, including the Quakers.

Seventeenth-century thinkers looked to a new philosophy away from outmoded classical and medieval authorities. Further, Platonists were being separated from Plato. Several persevered with Platonism, aided by the first full edition of Proclus' *Platonic Theology* done by Portus in 1618. The most notable were the Cambridge Platonists, such as Ralph Cudworth (1617–85) and Henry More (1614–87). Cudworth was much influenced by Proclus' works, especially on the soul and 'astral body'. More's philosophy, again, is Neo-Platonic. One of his students, Lady Conway, exemplified the sort of intellectual, religious and social circles in which these people were moving. She became a Quaker and befriended William Penn and the Dutch physician, chemist, philosopher and hermeticist Johann van Helmont.

Proclus was still regarded as the great master, especially by the mathematically-minded. Proclus' *Commentary on Euclid* enjoyed the highest reputation in the sixteenth century for showing that mathematics is high in the hierarchy of sciences and is the best model of reality. Thus we find Proclus being cited by Copernicus[54] and discussed by the scholars in the company of Galileo. The German astronomer Johann Kepler (1571–1630) was saturated in Proclus' mathematics and philosophy.[55] He quotes him often as the ancient genius who was misunderstood by his peers. He even makes him an early proponent of the doctrine of the Trinity.

Another philosopher and mathematician who sought to unite science with religion was the Dutch Jew, Spinoza (1632–77). There are similarities with Proclus, particularly on the mathematical exposition of metaphysics. Spinoza also drew on a Kabbalistic tradition, which grew in the twelfth-century south of France with Neo-Platonic influence, especially the negative and hierarchical approaches to God. Jewish theologians, such as Ibn Gabirol, had already access to Neo-Platonic material mainly through Arabic sources.[56] However, the direct influence of later Neo-Platonism on the Kabbalah remains tentative – though the mingling of Jews and pagans at the learning centres of the Eastern Roman Empire is documented.

Natural philosophers, later to be known as 'scientists' (the word was coined by Whewell), concurred in the mathematical, corpuscular structure of the universe. They looked to the ancient Atomists as precursors, such as the Epicureans. In the seventeenth century, the notion of a simple reality made of particles appealed to thinkers who believed in a rational, deterministic universe: the 'Mechanical' philosophers. Were corpuscles and collisions alone sufficient to explain everything? As Newton and others concluded, they were not. With force acting at a distance (gravity, magnetism), physics became science. Without it, as Descartes tried but failed to show with his puristic 'mechanical' cosmology, it would have remained wishful thinking. The ancient philosophers who had a fully-fledged corpuscular and mathematical theory of matter, with both particles and force, were the (Neo-)Platonists. But they were rarely credited, except for the Cambridge Platonists. Yet this is how (Neo-)Platonic science may be said to have entered the modern world.

With the rise of the experimental, mechanical philosophy, Platonism was seen as the style of thought suited to the Romantic movement, this time under its own name. Poets extolled the virtues of Nature, inner and transcendent beauty, otherworldliness and the dignity of the individual. The Romantics' ancient sources were clearer, for between 1787 and 1834 Thomas Taylor published the first translations of Neo-Platonic texts in a modern language, including Proclus' *Commentary on Euclid A* and the *Elements of Theology* (1792), *Platonic Theology* (1816) and the *Commentary on the Timaeus* (1820). Although Taylor had to work from Moerbeke's corrupt text, his speculative corrections were good enough to be included in later, complete editions. Taylor lived, lectured and wrote in London. His audience included several of the English Romantics of the late 1700s and early 1800s, such as William Blake (1757–1827), Coleridge (1772–1834), Shelley (1792–1822) and Wordsworth (1770–1850). Coleridge and Shelley, in particular, could read the texts in the original Greek. Here is a sample from Shelley:

> The One remains, the many change and pass;
> Heaven's light forever shines, Earth's shadows fly;
> Life, like a dome of many-coloured glass,
> Stains the white radiance of Eternity,
> Until Death tramples it to fragments. – Die,
> If thou wouldst be with that which thou doth seek!
> Follow where all is fled! – Rome's azure sky,
> Flowers, ruins, statues, music, words, are weak
> The glory they transfuse with fitting truth to speak.
> (Shelley, *Adonais* LII)

From Coleridge, here is a quotation about Proclus, which E. R. Dodds cites in his edition of the *Elements of Theology* (1963), p. xxxiii:

> The most beautiful and orderly development of the philosophy which endeavours to explain all things by an analysis of consciousness, and builds up a world in the mind out of materials furnished by the mind itself, is to be found in the Platonic Theology of Proclus. (Coleridge, *Memorials of Coleorton* II)

The English Romantics found support in Neo-Platonism for their rejection of the rigid determinism and materialism that came in the wake of the Industrial Revolution. In this respect, they were joined by the German Romantics and Idealists, such as Goethe (1749–1832) and Schiller (1759–1805). Thomas Taylor's works survived his ridicule and persecution in London, and influenced the American Transcendentalists, notably Ralph Waldo Emerson (1803–82).

In the early 1800s, there appeared the first complete editions of Proclus' texts: the *Elements of Theology* by Creuzer (Frankfurt 1822), and Proclus' *Opera* by Cousin (Paris 1820–27 and 1864), including the *Commentary on the Parmenides* and the trilogy on *Providence*, *Fate* and *Evil.* They were intended for, and read by, philosophers who were pursuing the same problems of the one–many. Creuzer and Cousin were friends of Hegel and Schelling. Cousin went on to become famous as the minister who organised the French national primary education.

Schelling (1775–1854), Hegel (1770–1831) and other German Idealists were the last major philosophers to be explicitly influenced by Neo-Platonic writings. In Britain, Idealism was promulgated by Bradley (1846–1924), and continued to flourish in Scotland. Hegel knew the *Platonic*

Theology and praised Proclus above all Neo-Platonists, superior to Plotinus. Hegel considered Neo-Platonism 'not a philosophic freak but a forward advance of the human mind'.[57] Schelling and Hegel developed, each in his way, Transcendentalism and Dialectic. Their philosophy included the 'Philosophy of Nature', *Naturphilosophie.* Based on the Neo-Platonic triadic dialectic, it proposed the unfolding of unity into a polarity of forces and to levels of potency. This dynamic view of matter was intended to replace the Newtonian atoms, and concentrated on fluid physics, electricity, magnetism and gravity. Part of the philosophy was the concepts of 'organic' explanation and the ultimate unity of forces.

Through Transcendentalism and *Naturphilosophie*, traces of Neo-Platonism can be discerned in nineteenth-century science. Kant's and Schelling's works were read by continental physicists such as J. Ritter (1776–1810) and H. C. Oersted (1777–1851), who discovered the effect of electricity on magnetism. Kant's influence on Einstein's theory of relativity is recorded, but remains controversial. At the Royal Institution in London, they were read by Humphrey Davy (1778–1829), the electrochemist and inventor of the miners' safety lamp, which is named after him. Davy was the patron of Michael Faraday (1791–1867), the famous experimenter who finally discovered the unity of electricity and magnetism, which underlies modern electrical power-generation and communications. Schelling considered Faraday's discovery of this unity as a verification of his philosophy. For Faraday, it was part of his own independent search for the unification of all forces, including gravity, which had roots in his Sandemanian belief that the physical world must reflect God's unitary nature (church founded by R. Sandeman, graduate of Edinburgh University). Davy was also a keen poet and socialised with the Romantics, particularly Coleridge. Coleridge was influenced by the Transcendentalists and was the one who first quoted in English the term 'unconscious', taken from Schelling's investigations into psychology.

Hegelianism's influence was formidable but divisive. In politics, some Hegelians supported fascism (Gentile) and others communism (Marx, Engels). In a sense, this was the totalitarian development of the (Neo-) Platonic dialectic, where unity is closed doctrinism, and the hierarchy inhumane regimentation, the sort that Karl Popper attacked in *The Open Society and its Enemies.* Compare the massive book, *Proklus Diadochus, Euclid Kommentar*, with a foreword and commentary composed in Munich in December 1943, by Max Steck.[58] He hailed Proclus as a 'Führer' who will lead the zeitgeist of German Idealism to victory (pp. xxiv, 152), and presented him as the key figure in the transmission of mathematical knowledge from Babylonians, Greeks and Aryans to

Nietzsche, Wagner and Schopenhauer (Spinoza is omitted from the rainbow of diverse luminaries). Most Hegelians, however, remained with liberal Idealism (Croce). In theology, Hegelianism supported the debate on rational religion.

Towards the end of the nineteenth century and the beginning of the twentieth, the first modern Greek editions of Neo-Platonic texts began to appear, including the Teubner texts of Proclus. Several scholars who undertook the evaluation of Proclus rejected him as irrational, so their works are excellent for their references but useless for their value-judgement. Among the scholars who showed a more moderate, objective attitude were J. Bidez, J. Lindsay, J. Simon, A. E. Taylor, E. Vacherot, F. Ueberweg, T. Whittaker and M. de Wulf.

So far, we have looked at Proclus' influence through his students and writings. Here we come to the most peculiar channel of transmission of Proclus' thought. It is a strange tale. In the early 1920s, in California, a goldminer, Emil Verch, while in his cabin, was overcome by a vision in which he 'heard' a sage delivering an uplifting lecture in a tongue completely unknown to him, and 'saw' demonstrations of geometrical theorems with peculiar symbols. The psychic experience repeated itself later while he was lodging at the Delta Hotel in San Francisco. He received the (psychic?) reply that the sage was Proclus. Some time later, while Verch was working as an engineer on a ship docked in New York Harbour, a Mr Beard passed him to someone who certainly knew about Proclus and Neo-Platonism. This was Kenneth S. Guthrie (not to be confused with the British scholar W. K. C. Guthrie). He had received an MA from Harvard, an MD from Pennsylvania and a Ph.D. from Columbia (1914, on Numenius) and Tulane. However, he never gained a foothold in academic life and was reduced to earning a living by teaching children, freelance writing and lecturing. His bread-and-butter books covered the spectrum of popular interest, including ancient mysteries, Freemasons and Rosicrucians, healing and religious studies. Still, he claimed commendations from his Harvard professor and the bishop of Pennsylvania. He knew Latin and Greek. He had already translated and written on Plotinus, Porphyry and especially Numenius. Verch visited Guthrie on 21 May 1924 and begged him to publish something of Proclus. Guthrie pointed out the 'ponderousness of the undertaking', 'tightened the belt by one notch' and put in one volume translations of Proclus' *Life* and some of his works, such as the hymns, the trilogy on Providence and the fragments on the Eternity of the World. He prefaced it with the account of the strange circumstances in which he came to write it, and a declaration of Proclus' usefulness to philosophers, scientists, theologians, poets, social workers and the general public.[59]

In the late nineteenth and early twentieth century, Neo-Platonism found an abode in 'Theosophy', the occult movement which absorbed most of the previous movement and gave birth to many others. At one time, Theosophy counted Thomas Edison, George Russell, the Nobel poet laureate W. B. Yeats and the young Pandit Nehru (later Indian prime minister) as members. Their sources included Thomas Taylor's and G. R. S. Mead's translations of Neo-Platonic works and Proclus. Yeats' involvement with mysticism and occult organisations is well documented. In Germany and abroad, Rudolph Steiner's society expanded the 'threefold order' doctrine into progressive kindergarten and school education, and pioneered ecological farming and materials. In these respects, the 1920s and 1930s first saw the growth for which the 1960s are (in)famous. The counter-culture adopted the many previous forms of Romanticism, Hermeticism and Neo-Platonism. For example, in July 1969, half a million people gathered at Hyde Park, London, to listen to the Rolling Stones. They held the concert in memory of a deceased member of the group. As a prelude, the lead singer, Mick Jagger, read a poem by Shelley. He included the lines 'Peace, peace! he is not dead, he doth not sleep . . . The One remains but the many change and pass'. Neo-Platonic words echoed across time. The 'new age', 'alternative' or 'green' concerns, such as sympathy for the environment, vegetarianism, spiritual life, empowerment and healing, thus became carriers of past philosophies and terms: 'levels of meaning', 'planes of existence', 'astral bodies', 'harmony', 'holistic', 'organic', 'oneness', 'illumination', 'inner powers', 'self-actualisation'. They now sound familiar to large audiences, and many have entered (on few occasions consciously) the jargon of therapy courses and management training schemes. Such is the popular diffusion of Neo-Platonism.

Proclus studies have benefited immensely from the interest of philosophers and philologists, such as W. Beierwaltes, H. J. Blumenthal, J. M. Dillon, E. R. Dodds, A. C. Lloyd, D. O'Meara, H. D. Saffrey, J. Trouillard and the Paris CNRS circle (who grew in the milieu of A. J. Festugière), C. Steel and L. G. Westerink. The year 1985 was the 1,500th anniversary of Proclus' death. To mark the occasion, on 21–23 June the University of Neuchâtel, Switzerland, housed an international conference, *Proclus et son influence.* On 2–4 October the premier research institution of France, the Centre National de la Recherche Scientifique, called an international conference, *Proclus lecteur et interprète des anciens.*

In the same year, the historian of science S. Sambursky published a special article on Proclus and Marinus.[60] The next most important landmarks will be the completion of new editions of Proclus' texts to be published by Les Belles Lettres under the directorship of A. Segonds: the *Platonic Theology*, on which H. D. Saffrey has been working since 1961 in collaboration with the much-missed L. G. Westerink; the *Commentary on Plato's Parmenides* by C. Steel; and the *Commentary on Euclid A* and *Hypotyposis of the Astronomical Hypotheses* by A. Segonds. All these scholars, through their sheer love for the subject, have turned late Neo-Platonism into one of the fastest-growing fields of study.

Evaluating Proclus and late Neo-Platonism presents many problems compounded by the compartmentalisation of scholarship. The prevalent form of writing in the late Hellenistic and Roman period was that of commentary. Consequently, Neo-Platonists' writings appear fragmented and unoriginal. This is reinforced when late Neo-Platonists are studied solely as readers of Plato, Aristotle or Plotinus. However, the commentators used the classical texts as frames for putting forward their own theories. Indeed, many of the commentaries contain rejections of the classical doctrines. Proclus himself is often spurned as a mere synthesiser. Although he relies on his teacher Syrianus, Proclus expounds a system of ideas with an insight and cohesion that cannot be found earlier. We may esteem him, therefore, as an original systematiser. In natural philosophy he was more of an original thinker, and in mathematics doubtless so.

This brings me to another point of contention. Neo-Platonism is often valued or dismissed for its mysticism and philosophy about the divine. Yet, as A. C. Lloyd has tried to show in his life's work, Neo-Platonism, especially as it developed after Plotinus, is just as interesting for its logical and analytical structures. D. O'Meara has shown why mathematics was so intimately tied to late Neo-Platonic theory of being and knowledge, while R. Sorabji has made transparent aspects of the late Neo-Platonists' contribution to theories of time and space and to the philosophy of mind and ethics.

Proclus has also been accused of pedantry and rigidity. If these are the attributes of someone who is careful about what he thinks and says, they can only be compliments. He is not as rousing as Plotinus, nor as concise as Porphyry. Still, he manages a more sophisticated metaphysics than theirs with a precision unmatched by his predecessors. His commentaries are wordy, but, like professors who repeat the key ideas in their lectures, this helps the newcomer. Nevertheless, his monographs, especially the *Elements of Theology*, show his capacity for economic expression. Moreover, Neo-

Platonic hierarchical arrangements were never monolithic. The grades of being and their properties were constantly disputed even after Proclus. Yet, the modifications did not destroy the overall hierarchical method of explanation itself. The basic character of the metaphysical system was dynamic. Proclus saw things in continuous procession and return, driven by power.

Another obvious obstacle to understanding Proclus' Neo-Platonic thought is simply the difference between his time and ours. One way of overcoming this barrier is to try to translate his concepts into modern equivalents. The task is fraught with dangers. If translating words and semantic nuances between sister languages is difficult enough, translating concepts is doubly difficult. Nevertheless, it is worth making associations, some concrete and some speculative. The Neo-Platonic theories of universals, especially that of Porphyry, have well-recorded links with the present, through medieval philosophy; so has the debate on being, existence and essence, especially in Continental philosophy (both phenomenology and poststructuralism have old roots). In causality, we may point to Kim's theory of events as instantiations that exemplify the cause's property. In systems theory, we can felicitously compare the hierarchical analysis, and more generally the theory of multi-level description. Recently, there has been much interest in multi-valued, 'fuzzy' logic. In linguistics, there is a correlate growth in prototypes and semantic fields. Here we may especially point to Proclus' rule of similarity. Surely all this has antecedents in the Platonic 'more or less', that is, validation by graded approximation to an archetype, as opposed to atomism (compare also the late medieval work on the 'latitude of forms' at Merton College, Oxford). In mathematics, Proclus' sets have been compared to Cantor's. Recent research in artificial intelligence has attracted increased interest in pre-axiomatic theory. Here we may point to Proclus' philosophy of mathematics and the dialectic which underlies axioms. In physics, we have already seen the indirect influence of Neo-Platonism on the nineteenth-century research programme for a unified field theory. In cosmology, we may juxtapose the most recent advances on the structure of time, space and matter, notably quantum physics, the inflation theory of the origin of the universe, and the theories of beginningless time and bound space without initial boundaries, delineated by light geodesics. W. Heisenberg, one of the founders of quantum physics, who proposed the uncertainty principle, intimated that the tendency of modern physics is to bring it closer to Plato's *Timaeus* and away from Democritus.[61] Science has moved on both in degree and kind away from the kind of physics prevalent when philosophical materialism was formulated. Some mathematical physicists and cosmologists, such as Roger Penrose (who worked with Stephen Hawking on black holes), have made public the belief that reality is Platonic in nature, which scientists discover through mathematics. With the worldwide cuts in particle physics research, and for intrinsic physical limitations, physicists are voicing the worry that experimental science will soon reach its limit, and theories about the origin and fundamental structure of the universe will be judged solely on their mathematical elegance.

In short, Proclus and the philosophers of Late Antiquity did not subscribe to a simplistic conception of human nature, the universe and the divine. By reading the primary texts, we discover that these ancient thinkers made full use of the most powerful and sensitive instrument available to them, the human mind. Proclus' aim, and that of his fellow philosophers, was to respond to the challenging question: how can philosophy, science and religion present a consistent picture in which unity embraces but does not stifle diversity?

NOTES

1. Saffrey and Westerink, *Proclus. Théologie*, 1, p. xi.
2. K. G. Holum, *Theodosian Empresses*, p. 87; contrary view, Alan Cameron, 'The Empress and the Poet', *Yale Classical Studies* 27 (1981), 271–9.
3. Saffrey and Westerink, *Proclus. Théologie*, 1, p. xii.
4. Holum, *Theodosian Empresses*, ch. 4, pp. 125–7.
5. Saffrey and Westerink, *Proclus. Théologie*, 1, pp. xlvi–xlvii.
6. Plutarch of Chaeronea was by his own admission primarily an essayist ('Parallel Lives' of Greeks and Romans). As a Platonist philosopher, he produced a heavily dualistic cosmology and daemonology, which influenced the Gnostics. D. Russell, *Plutarch*, p. 100; Dillon, *Middle Platonists*, pp. 203, 230.
7. Alan Cameron, 'The last days of the Academy at Athens', p. 16. Saffrey, 'Allusions antichrétiennes chez Proclus, le diadoque platonicien', repr. in *Recherches sur le Néoplatonisme après Plotin*, pp. 201–11.
8. On Julian II: P. Athanassiadi, *Julian. An Intellectual Biography* (London, 1992); G. Bowersock, *Julian the Apostate* (London, 1978); R. Browning, *The Emperor Julian* (London, 1975).
9. D. J. O'Meara, 'Aspects of political philosophy in Iamblichus', in *Divine Iamblichus*, ed. Blumenthal and Clark, pp. 65–73.
10. Proclus, *In Tim.*, 1.32.8–11.
11. Unity–diversity: Julian, *Contra Christianos*, ed. C. J. Neumann (Leipzig, 1880), pp. 179–80, 185–8. Proclus, *In Parm.*, 814–15.
12. See, for example, Averil Cameron, *The Mediterranean World in Late Antiquity*; P. Brown, *The Making of Late Antiquity*, (Cambridge, 1978).
13. E. Luttwack, *The Grand Strategy of the Roman Empire* (Baltimore, 1976), ch. 3, 'Defense-in-depth, the Crisis of the Third Century', ch. 2, section III, 'Border Defense: The Strategic Dimension'.
14. 'Top ten' table: D. R. Sear, *The Emperors of Rome and Byzantium* (London, 1981), p. 6.
15. The often-quoted passage from Vegetius, 1.20 (Vegetius Renatus, *Epitoma Rei Militaris*, ed. C. Lang, 1885), on the shedding of armour and helmets in the late Roman army, can be misleading. First, Vegetius says clearly that until Gratian the soldiers wore both cuirasses and helmets. Further, Ammianus refers frequently to the helmets and cuirasses, *galeae*, *loricae* (of metal), worn by the Roman legions as late as the battle of Adrianople (Ammianus 30.13.1–3). The alleged 'nakedness' of the legionary infantry might have begun with Theodosius I. He started using unassimilated Goths on a large scale, who helped him to crush the (pagan-led) Western army at the battle of the River Frigidus (AD 394). However, later still, Claudian (ca 400) describes the Roman infantry wearing metal *galeae* and *loricae*: see *Carmina*, ed. J. B. Hall (Teubner 1985):

Panegyricus dictus Honorio Augusto Quartum Consuli, 14f. (I thank Jacqueline Long for the Claudian refs.) This means that any shedding of armour in the Western army would have started after Stilicho's assassination. Secondly, Vegetius reports on the state of the Western army, *not* on the Eastern. See also on the manufacturing of *loricae* (in addition to *clibanaria* armour) in the *Notitia Dignitatum*, ed. O. Seeck; cf. the representation of an infantryman with a scale corselet, 'Turnus', Vatican, Biblioteca Apostolica Vaticana, Vat. Lat. 3867, f. 74v (dated late fifth century) in *De Rebus Bellicis* (BAR Series 63, 1979), Part I, ed. M. W. C. Hassall, Plate IIb, p. 30, also Plate III. Considering that the Eastern Romans emerge in the late fifth- and sixth-century accounts with close-order infantry wearing body armour (mail, scale or laminae) and the overall prosperity of their half of the empire, it is safe to assume that they never ceased to have it.

16. E. Birley, *Research on Hadrian's Wall* (1961), pp. 125ff., 208.
17. Recent research has shown that the late imperial army was much smaller in number than previously thought, perhaps even by a third: R. P. Duncan-Jones, 'Pay and numbers in Diocletian's army', *Chiron* (1978), 541–60. This would underline their effectiveness. I am grateful to Mark Hassal of the Institute of Archaeology for the reference.
18. S. N. Lieu, *Manichaeism in the Later Roman Empire and Medieval China* (1985).
19. R. Sorabji, in *Aristotle Transformed*, pp. 9–11.
20. E. J. Bickerman, *Chronology of the Ancient World*, 2nd edn (London, 1980), p. 74.
21. A vivid description of university life in Late Antiquity can be found in Zachariah of Mitylene, *Vie de Sévère*, in M. A. Kugener, *Patrologia Orientalis* 2.1 (1903), pp. 7–115, esp. 7–45. See also S. L. Karren, *Near Eastern Culture and Hellenic Paideia in Damascius' Life of Isidore*, Ph.D. thesis, University of Wisconsin-Madison (1978), ch. 1.
22. Synesius, *Epistulae* 136.21, ed. R. Hercher (Paris, 1873).
23. Porphyry, *Life of Plotinus*, 15.19; 20.39.
24. Cf. A. H. M. Jones, *The Decline of the Ancient World*, p. 202. Purchasing power: A. Burnett, *The Coins of Late Antiquity* (British Museum, 1977), p. 8.
25. A. Frantz, H. Thompson and J. Travlos, *The Athenian Agora, Late Antiquity* (Princeton, 1988), pp. 42–4, plates 27b, 44.
26. As a 'Pythagorean' saying, see Philostratus, *Life of Apollonius of Tyana*, bk 8 ch. 28, line 12: 'Live unobtrusively, and if that cannot be, slip unobtrusively from life'. Usually it is known as Epicurean, fr. 551, but is attributed even earlier to Democritus.
27. A. Frantz, et al., ibid., p. 19.
28. E. Gibbon, *The Decline and Fall of the Roman Empire*, 1, ch. 36. Reference from Damascius, *Vita Isidori*, apud Photium, fr. 108 (ed. C. Zintzen). Damascius deliberately links the Athenian School with Anthemius' (alleged) intention to revive pagan worship. J. Bury, *History of the Late Roman Empire* 1, p. 247, says of Anthemius that he was 'suspiciously inclined to paganism' and 'too fond of philosophy and thaumaturgy'.
29. *Eudocia Augustae, Procli Lycii, Claudiani carminum graecorum reliquae*, ed. A. Ludwich (1897). See also *Eudociae Augustae, Violarium*, ed. I. Flach (1880), ref. 845. On Eudocia and Pulcheria, see Alan Cameron, 'The empress and the poet: paganism and politics at the court of Theodosius II', *Yale Classical Studies* 27 (1981), 217–89; Holum, *Theodosian Empresses* (1982), ch. 4 on Eudocia, concludes, p. 224, that Eudocia adopted Christianity for practical reasons to provide her (pagan) kin and associates with access to power, and later to act as female ruler; cf. ch. 5 on the controversy over the 'Mother of God'.
30. Damascius, *V. Isidori*, pp. 109, 238–9, 248–9, 251. Cf. R. Keydell, 'Pamprepius I', in Pauly and Wissowa (eds), *Realencyclopaedie der Classischen Altertumwissenschaft*, 18.3, cols 409–15. A. Lippold, 'Zenon XVII', in Pauly and Wissowa (eds), 10A (1972), cols 185–8. S. L. Karren, ibid., pp. xiv–xvi, 46–7.
31. This age was not extraordinary for well-off people in antiquity. According to a survey of lifespans of famous ancient Greeks and Romans, J. Montagu, *Journal of the Royal Society of Medicine* (1993), the average was as high as 72.
32. For an analysis of the horoscope data: O. Neugebauer, *A History of Ancient Mathematical Astronomy* (Berlin, 1975), Part II, pp. 1,032–4. Most recent writers who take 412 as Proclus' year of birth rely on Saffrey and Westerink, *Proclus. Théologie*, vol. 1 (1968), p. x, who relied on O. Neugebauer and H. B. Van Hoesen, *Greek Horoscopes*, American Philosophical Society 48 (Philadelphia, 1959), pp. 135–6. Étienne Éverard, 'La date de la naissance de Proclus le néoplatonicien', *Antiquité Classique*, 29 (1960), 137–41, also cited Neugebauer (1959), but made explicit that the conflicting data cannot be reconciled. Both Éverard and Saffrey and Westerink relied on Neugebauer's very brief remarks, and did not notice the astronomical

problems. Neugebauer (1975) offered a more fleshed-out account, but did not venture an explanation.

33. 'Lot' and 'sect' are (also) astrological terms (see Ptolemy, *Tetrabiblos*, et al.): from the texts, I calculate that the 'Lot of Fortune' (which relates to material things) falls on 9 degrees Gemini (raw data), or 1 degree Leo (emended data). The 'Lot of Daimon' (which relates to soul and intellect) falls on 7 degrees Aquarius (raw data), or 7 degrees Sagittarius (emended data). The Daimon belongs to the 'sect' of the sun. By the raw horoscope, Proclus' Daimon falls next to the previous new moon and very close to Mercury, the planet said to govern the quality of soul (Ptolemy, ibid., bk 3, ch. 13). However, by the emended horoscope, the Daimon falls practically on the cusp of the ninth part, the House of God (Ptolemy, ibid., ch. 10; but house divisions were changed by Porphyry). In the absence of birth-data, the zodiacal position rising at the moment of birth, the ascendant, was usually concocted from astrological associations with the previous syzygy (Ptolemy, ibid., ch. 2). For the Proclus horoscope, this is the previous new moon. The position is given as approximately 8 degrees (Aquarius), which coincides with the 8 degrees of the given ascendant (in Aries), possibly because its ruler Mars is near the mid-heaven, the reference for a tentative horoscope (there is no textual support for the convenient option that Proclus' lifespan was calculated from his time of conception (cf. Ptolemy, ibid., bk 3, ch. 1), not his time of birth). Is this how Proclus' philosophical 'lot' was present at the 'very beginning'?
34. Eclipses: Marinus (*V. Procli*, 37); O. Neugebauer and H. B. Van Hoesen, *Greek Horoscopes*, ibid., p. 136.
35. Ammonius, *ho megas Proklos*: *In Analyticorum Priorum* CAG 4.6, ed. M. Wallies, 31.24; Christodorus' *Peri tôn Akroatôn tou megalou Proklou*: in Ioannes Lydus (sixth century), *On Powers*, ed. and trans. A. C. Bandy, 172.20, in Lydus himself, *De Mensibus*; and probably ironically by John Philoponus, *Contra Proclum*, 59.24. Simplicius: *hoi meta Proklon heôs hêmôn schedon ti pantes . . . kai en tois allois hapasi tôi Proklôi katêkolouthêsan*, *In Phys.*, 795.12.
36. Damascius, *V. Isidori*, p. 251; L. G. Westerink, *Anonymous Prolegomena*, pp. xii–xiii.
37. I. Hadot, *Le problème du néoplatonisme alexandrin: Hiérocles et Simplicius*, pp. 20–32.
38. Alan Cameron, 'The last days of the Academy at Athens', *Proceedings of the Cambridge Philological Society*, 195 (1969), 7–29. See also H. J. Blumenthal, '529 and its sequel', *Byzantion* 48 (1978), 369–85.
39. Michel Tardieu, 'Sabiens Coraniques et "Sabiens" de Harran', *Journal Asiatique* 274 (1986), 1–44; 'Les calendriers en usage à Harran d'après les sources arabes et le commentaire de Simplicius à la *Physique* d'Aristotle', *Simplicius, sa vie, son oeuvre, sa survie*, in *Peripatoi* 15 (1987), ed. I. Hadot, pp. 40–57.
40. Frances Yates, *Giordano Bruno and the Hermetic Tradition* (London, 1964), pp. 49–60, adds that the *Picatrix*'s emphasis is on 'astral' magic, which escapes astrological determinism, and the operator gains power over the stars. See also J. Hjärpe, *Analyse critique des traditions arabes sur les Sabéens Harraniens*, Ph.D. thesis (Uppsala, 1972); Proclus is mentioned on pp. 159–63ff. This would be characteristic of Iamblichean Neo-Platonism, because it emphasises the theurgic, operational, view of the divine.
41. Cf. S. van Riet, 'A propos de la biographie de Simplicius', *Revue Philosophie Louvain* (1991), pp. 506–14.
42. D. Pingree, 'Some sources of the *Gayat al-hakim*', *Journal of the Warburg and Courtauld Institutes* 43 (1980), 1–15. I am grateful to David Pingree for the discussion on Harran and the Picatrix.
43. David of Armenia: Avedis K. Sanjian (ed.), *David Anhaght, the 'Invincible' Philosopher*, UCLA Studies in Near Eastern Culture and Society 7 (Atlanta: Scholars Press, 1986), including an article by Robert Thomson, 'The Armenian version of David's Definitions of Philosophy', pp. 37–47; and Milton V. Anastos, 'On David's Neoplatonism', pp. 111–17.
44. R. Walzer, 'Buruklus', in *The Encyclopaedia of Islam*, ed. H. A. R. Gibb et al. (1960), 1, pp. 1,339–40. See also R. Walzer, 'Lost Neoplatonic thought in the Arabic tradition', in *Le Néoplatonisme* (1969), pp. 319–26.
45. J. Kraye, W. F. Ryan and C. B. Schmitt, *Pseudo-Aristotle in the Middle Ages* (1986), pp. 38–60, 129–90; includes references on the *Liber de Causis* and the *Theology of Aristotle*.
46. I. R. Netton, *Muslim Neoplatonists* (London, 1982). References to Proclus are on pp. 34, 36. More generally, see P. Morewedge (ed.), *Neoplatonism and Islamic Thought*, (Albany, 1992).
47. On the Neo-Platonic background and the pagan contribution to the building of the Gothic Cathedrals: E. Panofsky (ed. and trans.), *Abbot Suger on the Abbey Church of St-Denis and its Art Treasures*, 2nd edn (Princeton, 1979); G. Duby, *Les Temps des cathédrales: l'art et la société 980–1420* (Paris, 1976).

48. Cf. W. Beierwaltes, 'Negati Affirmatio, or the world as a metaphor: a foundation for Medieval Aesthetics from the writings of John Scotus Eriugena', *Dionysius*, 1 (1977), 127–59.
49. For Neo-Platonic influence on Thomas Aquinas, see the journal *Dionysius*, for example: W. J. Hankey, 'Theology as system and science: Proclus and Thomas Aquinas', *Dionysius* 6 (1982), 83–93. On the scale of being and Renaissance influence, I am grateful to Edward Mahoney for his 'Metaphysical foundations of the hierarchy of being according to some late-medieval and renaissance philosophers', in *Philosophies of Existence, Ancient and Medieval*, ed. P. Morewedge, pp. 165–257.
50. C. Schmitt, 'Philoponus' commentary on Aristotle's *Physics* in the sixteenth century', in *Philoponus*, ed. Sorabji, pp. 210–30.
51. Frances Yates, *Astraea: The Imperial Theme in the Sixteenth Century* (London, 1975).
52. B. Walker, 'Reincarnation', in *Man, Myth and Magic*, ed. R. Cavendish, 9, pp. 2,346–50.
53. I am grateful to Robert K. G. Temple for the reference to Sir John Danvers.
54. E. Rosen, *Copernicus and the Scientific Revolution* (Malabar, 1984); D. Ehlers, 'Proklos und Copernicus' (Bucharest, 1981).
55. A. Segonds (ed. and trans.), *Jean Kepler. Le Secret du Monde* (Paris, 1986); M. Caspar, *Kepler* (English translation, London, 1959); J. V. Field, *Kepler's Geometrical Cosmology* (Chicago, 1988).
56. J. Trouillard, 'Proclus et Spinoza' (1982), pp. 435–48. L. Goodman (ed.), *Neoplatonism and Jewish Thought*: see J. Dillon on the parallelism of Proclus' view of matter and Ibn Gabirol.
57. Quote from *Vorlesungen über die Geschichte der Philosophie* (Stuttgart, 1928), 3, pp. 71–93. Proclus and Hegel: principally W. Beierwaltes, *Proklos, Grundzüge seiner Metaphysik*. Also N. Scotti, 'Aspetti di attualita teoretica del pensiero procliano negli studi di Werner Beierwaltes', *Rivista di Filosofia Neo-Scolastica*, 82 (1990), 120–45; but see P. Gottfried, 'Hegel and Proclus – remarks on a problematic relationship', *Thought* 56 (1981), 263–71.
58. I thank Alain Segonds for bringing it to my notice.
59. K. S. Guthrie, *Proclus: Biography, Hymns and Works* (New York, 1925).
60. S. Sambursky, 'Proklos, Präsident der Platonischen Akademie, und sein Nachfolger, der Samaritaner Marinos' (1985), pp. 35–51. I am grateful to David Blow for the reference.
61. W. Heisenberg, *Physicists' Conception of Nature* (English translation, 1928); idem, 'Platons Vorstellungen von den kleinsten Bausteinen der Materie und die Elementarteilchen der modernen Physik', *Im Umkreis der Kunst, Fests. Pretorius* (1954), pp. 137–40. See also P. Friedländer, *Plato* 1, ch. 14, 'Plato as a physicist', pp. 246–60, on his relevance to modern science.

2

GENERAL METAPHYSICS

Proclus would normally present the principles of his philosophy within the Neo-Platonic curriculum. His task as Platonic 'Successor' would be to show that past Greek philosophers, notably Aristotle, harmonise with Plato on the fundamentals of philosophy and that he is the best interpreter of their writings. Commentaries on classical greats of the curriculum are thus our main source. Proclus' commentaries on Aristotelian logic are lost, but ideas can be drawn from such commentaries by other Neo-Platonists, before (Porphyry, Dexippus) and after (Ammonius, Simplicius). Fortunately, several of his extensive commentaries on Plato have survived. I shall be quoting in this and following chapters from commentaries on two of Plato's dialogues, the *Timaeus* and the *Parmenides*, which the later Neo-Platonists put at the very top of their curriculum. The works that come closest to presenting an integrated picture of Proclus' own philosophy are the *Elements of Theology* and books 1 and 2 of the *Platonic Theology*. 'Theology' has partly the Aristotelian meaning of first philosophy or metaphysics. However, to gain an impression of the depth and magnitude of his thought, it is best to read at least all six books of his magnum opus, the extant *Platonic Theology*.

Proclus' philosophy is complex but composed of a few leitmotivs. These we shall examine in this chapter. What makes his system often hard to understand and describe is the close weaving of his themes – pick one strand and pull the whole carpet. He employs highly technical terms and notions, which originate in the philosophical tradition of Plato, Aristotle, the Stoics, the Neo-Pythagoreans, Plotinus and Iamblichus. He needed to have the degree of complexity in his account that the subject warrants.

1. METAPHYSICS AND KNOWLEDGE

Metaphysics is central to Proclus' philosophy and science. The study of being, properties and causes promises to illuminate the nature of things, and establish the foundations of knowledge. For Proclus, the questions of philosophy depend on establishing what is the nature of the entities at hand. Psychological questions, for example, depend on knowing what is the nature of *psychê*, its sensory and cognitive faculties, and range of action. Questions about ethics depend on having an understanding of what is good and evil, whether they exist or not, whether they are absolute or relative, and what underlies choices. Questions about physics and astronomy depend on analysing physical entities and finding the essential laws by which they move. Questions about mathematics depend on securing the nature of the objects of mathematical knowledge, both in respect to themselves and in connection to physical things. Questions about knowledge depend on establishing what is the nature of knowledge, of the knower and the object, of the sources and means of knowledge. Even religion is subject to metaphysics, for the philosopher must examine what is the nature of the divine, and God's relationship with the rest of existence. Neo-Platonists from Porphyry onwards extended the metaphysical questioning to literary works, especially the epic poets Homer and Hesiod. Beside analysing literal and metaphorical references (which help establish authenticity), they looked at sublime literary works as allegories of truths. So, metaphysics is at the basis of philosophical inquiry.

Neo-Platonists sought to find metaphysical answers in the context of the theme of unity–diversity. From the late Plato, and the long interpretive tradition on the *Parmenides*, Neo-Platonists were persuaded that true knowledge has as its object a reality with unity. To sketch the general argument, we cannot know properly anything that has a compound structure, for it has no one, fixed identity. Compound structures lack unity and tend to fall apart, like decomposing corpses. Ontology correlates with knowledge, for things without stable identity can only be known as incidentals and anecdotes. Things that really exist have a permanent and fixed nature. To stay permanent and fixed, reality must have unity to maintain its integrity. That which has fixed and permanent identity is the proper object of secure knowledge. The real and the anecdotal are not, however, two independent things. The latter is a passing appearance, a 'phenomenon' and 'copy' of the 'really real'.

From the interpretation of Plato's *Republic* VI and the *Parmenides* 137 ff. (and other Platonic dialogues), Neo-Platonists thought that philosophy has for its object a graded reality. It is graded according to the degree of unity in beings. This ranges from the level of least unity (or, for someone like Plotinus, no unity at all), which is matter and the bitty, transient, physical domain, to that of maximum unity, which to them was the essential character of divinity. Correspondingly, there are many levels of knowledge. They range from the fragmented sensory perception of things, through the mental working-out by personal mind, to the intuitive, direct apprehension of the essence of things, and ultimately to a supra-intellectual union of subject and object. Ontology correlates also with values. Unity is the good and excellent (*agathon*) in things. So, for a scale of unity there is a scale of knowledge and a scale of value.

As human beings, we are a bundle of these levels. We are mortal, in that our body keeps falling apart and needs sustenance from external substances. However, we have a more permanent nature, which is the seat of our sense of good. It is the living *psychê*, whose unfailing unity keeps our biological body organised and imparts our personal identity. Thus, to the (late) Neo-Platonist, the more we analyse things, the more we discover both about ourselves and the universe, and the better we recover our root-principles and values.

Proclus' late Neo-Platonic metaphysics does not fall adequately either under philosophical idealism or realism. It is idealist in that reality resides in consciousness, where it varies with the mode of awareness. Being is as the knower appropriates it. However, it is realist in that personal conceptions are validated by their correspondence to objective reality, which is independent, and often transcendent of personal minds. This asymmetry is so important to Proclus that he could be described as foundationalist. Sound knowledge depends not only on logic but also on layers of self-substantiated principles (*hypostaseis*), which are the foundations. Philosophical analysis leads to higher and simultaneously to fundamental knowledge. Yet, even this distinction between realist and idealist collapses when the Neo-Platonist refers to the 'intelligible' levels. There, the contents of one's consciousness are the same as the objectively real. Thus the higher the level of thinking, the greater the degree of consciousness, and the more objective, intimate, complete and fundamental the knowledge one acquires.

What could it be like to get to know a thing? From Hellenistic philosophers, and from the founders of Neo-Platonism, Plotinus, Porphyry and Iamblichus, Proclus had learned that one lives the life of the area of activity in which one is engaged. For example, when we are concerned with food and drink we are concerned with the sustenance of biological, animal life: in other words, to think, or 'be', an animal. When one is concerned with sales and profits, one thinks and 'is' a businessperson. When one is concerned with childcare, one thinks and 'is' a parent. So, our life is as complex as the number of activities that we exercise or have available to exercise. From another perspective, the life which we lead gets distracted, diluted, by the number of other activities in which we engage. For example, we do not solely eat and drink, for we have to do other things. The businesspeople, who are also parents, are not being businesspeople when they eat and drink or spend time with the children. So the pure animal, the pure businessperson and the pure carer become diluted when their activities mingle.

How can outsiders come to understand all these? They can with the appropriate knowledge and by exercising appropriate skills. In Greek, the term 'appropriate' (*oikeios*) means being of the same household. Someone who understands accounting and selling can understand the problems which business people have; and the same for someone who understands the harassed parent. So, for each level of activity, there is an appropriate level of knowledge with which to comprehend things, and an appropriate level of being that supports it. In more general terms, things are composed by as many qualities and modes as their areas of activity. To get to know them entails exercising the appropriate kinds of perception. How well we get to know them depends on how intimately we can reach them.

To preview Proclus' scheme, with our senses we apprehend the bodily aspect of things. We perceive physical qualities, and with our personal mind we formulate beliefs and theories about things: we try to match (*synarmosis*) our ideas to objects. However, we only have a 'partial' view and subjective knowledge of objects. To gain a more comprehensive picture, we have to bridge the gap between thinker and object. We have to travel out of our particular state, and exercise an intuitive intellective grasp. When thinker coincides with the object, conception is complete. But what we have is the sum total of the object's properties, not its essence. To grasp that, we have to apprehend its bare substance as one undifferentiated whole. At the centre of every coherent entity lies a pure unity, its selfhood. It is so unqualified by anything mental or physical that cannot be touched even by intellect. It can only be reached by an act of union (*henôsis*).

2. ALL IN ALL BUT APPROPRIATELY

How can there be diversity and unity? Proclus' general answer is that 'everything is in everything but in a manner appropriate to each' (*panta en pasin, all' oikeiôs en hekastôi*), or that 'everything is everywhere existing in proportion' (*panta pantachou ana logon esti*). This has been rightly called the 'golden rule' of Neo-Platonism, for it is the main method for explanation and analysis.[1]

Originally it belonged to the theory of material stuffs in Anaxagoras, but near Plotinus' time it had been extended to the domain of intellect and Platonic Forms. It combines in one the various expressions of wholeness and universality, while retaining what makes properties specific and relationships distinct. It also lies at the heart of the method of reconciling diverse, even antithetical propositions. Each holds true according to its particular viewpoint, the 'scope', which is 'appropriate' to it.

Do different persons experience things differently? A straightforward response is that they do not. People at the same location see the same sky and buildings, hear the same sounds. Others, who are far away, would have the same perceptions if they were at that site. Does this mean that people lose their individuality when judged by their experiences? Another response is that people do have different experiences. No two persons can ever occupy the exactly same spot and have the same perspective, nor have exactly the same physiology. Even identical twins standing next to each other would still have different experiences depending on whether the one is wearing lenses or a hearing-aid, or is attentive while the other is not. Education, intellectual specialisation, culture, etc., expand the range of what is covered by experience, and compound the varieties within it. Two people looking at an abstract painting will often see and describe it very differently. Persons do not lose their differences, after all. Can the two responses be reconciled? Yes, if each holds in a qualifying respect. The objects or causes of perception remain the same. What differs is the manner in which they are experienced – 'the manner appropriate to each'.

Proclus offers this sort of argument when he examines how things become known. However, like most Greek philosophers, he discusses knowledge and psychology less in terms of individuals and more of types, that is, types of life (human, animal, etc.). Secondly, 'perception' and 'experience' are not limited to input from the physical senses but include purely mental 'grasping'. To apprehend something can mean to feel it with one or more of our physical senses, to come to understand it through rational argument, or intuit it directly. Bearing these qualifications in mind, the above illustration can be restated. The same things are apprehended differently because of differences in awareness or consciousness. Awareness may be dependent on conditions physical or mental. Moreover, the different faculties, even of the same person, apprehend the same object differently. Proclus often employs a host of adverbs and adverbial phrases to express the different modes of perception.

> So it will not be the case that because that which is known is one and the same, for this reason those things also which know it should be related to the objects of their knowledge in exactly the same way;

> for, after all, a white thing is known by sense-perception and by opinion (*doxa*), and by our intellect, but not in the same way; for sense-perception cannot comprehend its proper objects of knowledge in the same way that the intellect does; for intellect knows also the cause (*aitian*: also explanation), while opinion knows only the fact (*to hoti*); it is by virtue of this, indeed, that we say that correct opinion differs from knowledge, the former knowing only the fact of the thing and being weak for this reason, the latter comprehending the object of knowledge along with its cause (or explanation) and thus able to comprehend it more strongly . . . So then, knowledge varies according to the nature of the knowing agent. It is not the case that it is according to the nature of the known object that it is known by everything, but is known in a superior way by superior agents, in an inferior by more inadequate ones . . . For indeed hearing perceives the objects of hearing in one way . . . reason perceives in a different way both these things and all other things of which there is no sense-perception. (Proclus, *In Parm.*, 956.35–957.32)

For Proclus, the problem of unity–diversity goes deeper. Even if personal differences were eliminated and everybody achieved perfect understanding of what there is to know, there would still be diversity. For example, not all graduates of the same study-course with the same grade think identically about their subject of study. Perfect intellects (*nooi*) with perfect knowledge retain a distinct identity even when they are thinking simultaneously all there is to know. Proclus' dialectical conclusion is that perfect intellects still possess a special character that preserves their discrete identity.[2] However, at the level of perfect knowledge the problem of unity–diversity becomes dramatically more acute. What is conceived is no longer a partial impression, but the real thing. The problem of unity–diversity infects the nature of being, and conversely.

First, thought and the object of thought become the same. What does it mean? This state is often translated as intuitive conception. It is direct conception, the sort favoured by those who accept that we perceive real things directly, without intermediaries such as sense-data or private ideas. Still, the sameness of thought with its object is stronger here. They are the same stuff: intellect is being, and being is intellect (a conclusion based on Plato's *Timaeus* and Aristotle as developed by the Middle Platonists). The intelligible realities are not in an unknowable realm beyond intellect, for they would be beyond scientific account. To be intelligible, they have to 'reside' in some kind of intellect, and constitute its content of thinking, its thoughts. Such intellect cannot belong to any mortal person, nor to any individual lofty spirit. It has to be an all-encompassing, perfect intellect: the Intellect of God (a solution common to idealist theories, typically Berkeley). The thoughts of a perfect intellect are not mere concepts but realities.

Additionally, intellection includes self-thinking. An intellect thinks not only of one object, but is also aware of its own process of thinking. Its object of thought, in this case, is none other than its own thinking. But since the content of perception (with the senses and/or with mind) is a thought formed by the mind while perceiving, there is no discernible difference between thinking and that of which it is thinking.

Intellection thus involves a wide range of objects: something distinct from the intellect; the intellect itself in the process of thinking; and the ideas resulting from the thinking intellect. This is a key element in Proclus' philosophy. Once the correlation of consciousness and being is firmly established, he can distinguish three metaphysical states, where the same thing can exist 'causally' (like the distinct object of thought), 'in its own station' (like self-thinking), and 'in participation as an image' (like the resultant ideas of the thinking intellect), each existing 'in the manner proper to each'.

Thirdly, the object of thought has priority over its thinker and its thoughts. So far, the line of argument takes us to a world where everything is as it is because somehow a thinker has created it. Does every flamboyant fancy or every philosophical proposition merit a place in the universe? Proclus asserts that it does not, and rejects those who take such a line of interpretation. Reality comes first, and the thoughts about it second. Construals of personal minds depend on real objects and are posterior to them. A thinker thinks about an object because there is already such a distinct object. In the case of self-thinking, it just means that there exists a mind thinking. Our ideas about our world are not wholly created by our personal minds, but are due to entities independent of us. This is the remarkable, if puzzling, position of late Platonic philosophy. The universe is intelligible and constituted of an independent reality residing in perfect, objective intellects. Everything that exists in some definable way is in every thing, in the epistemological and the metaphysical sense. Although everything is 'in' everything, they are so in the manner distinctive to their household (*oikeios*): their level of consciousness and being.

> For even as it is not the thought that my father is my father that is the cause of me (to be born), but my father himself, so in the case of causal agencies, it is not the thoughts about their existence as causes that makes them causes, but they themselves, prior to the thoughts

> about them, which are indeed the causes of the truth of the thoughts which declare that they are the causes of whatever they are the causes of. (Proclus, *In Parm.*, 899.4–11)

> For the (pure) Intellect, being in itself and thinking of itself, is at the same time full of objects of thought. Just as even in the objects of sense-perception, whatever appears as a unity is in reality a multiplicity, so in the intelligibles the dual nature of thought and real-being is substantiated as a unity (*heniaiôs hyphestêke*). *Psychê* (or personal mind), then, in transiting from its own thoughts to real beings, transfers itself as it were from one set of things to another; but the thoughts of Intellect are identical with the real beings through the intellective reversion and the sameness (*tautotêta*) that prevails at that level. (Proclus, *In Parm.*, 901.7–17)

'All in all but appropriately' is central to Proclus' philosophy and method of interpretation (*exêgêsis*), where the second has the role of a modifier on the first. With it, he can formulate a general law for the plurality and diversity of beings and phenomena, causes and effects, qualities and meanings, while retaining their speciality. Moreover, the same thing can be conceived as existing on many different levels, each with its own distinct character. The advantage of this approach is that it makes analysis possible. A thing is not an opaque indivisible, but composed of a bundle of levels and modes. The same thing, be it a metaphysical entity, a piece of knowledge, a moral definition or a literary text, may possess diverse properties or have different meanings. It all depends on the level of analysis. Indeed, for Proclus, analysis marks the 'return' to one's own-household simple principles and ultimately to the prime unity.[3] Neo-Platonists after Plotinus paid closer attention to the analytic household-respects. This is what led to the proliferation of discrete 'appropriate households', the levels of being and knowledge.

Proclus' works are saturated with variants and applications of this theme. As we saw, one of them divides the modes of existence in three, and seems original to Proclus.[4] Before something comes to exist in its own distinct sense, it has been anticipated in its causes. Afterwards, it persists as part of other forms of being, the 'products' of its predication.

> All that is substantiated in any way is either in a cause (*kat' aitian*), like a principle (*archoeidôs*), or in its own proper state of existence (*kath' hyparxin*), or in a participant (*kata methexin*), as an image (*eikonikôs*). For either we see the product in its producer (*en tôi paragonti to paragomenon*), as pre-existing in its cause . . . or we see

> the producer in the product . . . or else we contemplate each thing in its own order, neither in its cause nor in its resultant. (Proclus, *El. Th.*, prop. 65)

Proclus' system has about six levels: being, life, intellect, soul, nature and body. In one respect, the first three are moments of intellect: the 'intelligible' object, the thinking process and the 'intellective' subject. Conversely, they are expressions of being: the essence, the power, the activity. Soul and nature are aspects of one principle, whose subject is body. When he divides the six by the formula of participation, they appear bunched into threes. For example, intellect has life and being by participation, while intellect may contain soul, nature and body in a causal mode. Sometimes, some of the levels are omitted, usually life and nature. The ultimate One and its Matter have a special status in this arrangement. The absolute One exists solely as a cause, transcending even its own existence. However, Unity has species in existence: each is the 'unit' (*henas*), 'flower' or 'summit' of the substance in which it dwells. Matter exists solely in participation. All these are discussed in Chapter 3.

3. SIMILARITY AND IDENTITY

> The soul by virtue of its own mental (*dianoêtikon*) faculty possesses precise knowledge of the existent beings. By being established in the intellective level of its own appropriate substance, it conceives all with simple and indivisible intuitions. Running up towards the One, the soul folds together all the plurality within it, operates with divine inspiration (*entheastikôs*) and makes contact with the existences above intellect. For everywhere the similar joins (*synaptesthai*) naturally with the similar, and every cognitive knowledge (*gnôsis*) connects (*syndei*) what is being observed with what is observing (*tôi katanooumenôi to katanooun*), and what is being perceived with what is perceiving (*aisthêtikon*), and what is conceived discursively with what is conceiving discursively (*dianoêtikon*), and that which is prior to intellect with the flower of the intellect. (Proclus, *On the Chaldaean Philosophy*, 4.1–11)

How can knowledge be acquired from an object, unless it affects the means for gaining such knowledge? How can the means of perceiving (in the broad sense) be affected, unless they become in some way *like* the object? Greek philosophers agreed that cognitive knowledge must involve a certain unity between the subject and object. To take in some piece of information about the object implies that the subject can respond to it. How can it be responsive unless it has something in common with the object? That like perceives like may be traced to the Presocratics (Democritus, Empedocles) and Plato. Later theories (Aristotle's potentiality–actuality, Epicurean particle emanations) all had in common the notion that subject and object are somehow alike, and so for Plotinus.[5]

For Proclus, unity is that which makes the universe accessible to mind and maintains the identity of things. There are no gaps in the continuum of knowledge to render the whole unintelligible. Does this mean, however, that a rat is an all-knowing sage, or that dreams and phantasies are part of the intelligible universe? 'Everything is in everything' is not the whole of the rule. The same things are apprehended unequally, because it depends on the subject. The poor rat has only a very limited, rat-way of perceiving things, though in principle nothing is inaccessible to it. On the other hand, what personal minds create has value when founded in objective reality.

The sort of knowledge that Proclus is concerned with preserving is epistemic, scientific knowledge about truths. To do so, he has to ensure that there is something to sustain truths, and that they are capable of recognition. What sustains truths is (non-physical) reality, which exists independently of its observers. What renders them accessible to mind, and makes knowledge possible, is a conditional unity between the thinker and the object of thought during perceiving. In knowing, the thinker becomes like its object of thought. More precisely, that which is doing the apprehending (the faculty, the 'power') becomes like its object of cognition. Note in the above passage how Proclus talks repeatedly of 'joining' and 'connecting' like with like during the process of knowing. Cognitive knowledge covers a wide range of 'perceptions': sense-perception (*aisthêsis*), concepts resulting from argumentative thinking (*dianoêsis*), direct or intuitive apprehension (*katanoêsis*). Note also his repeated use of complementary passive and active participles to refer to the two components of perception. He does not shift to distinct nouns until 'cognition' reaches the level of intellect (and above) where epistemological states identify with real beings.

To Platonists, similarity was central to their metaphysics. In addition to the controversial relation of sense-perceived objects with the Forms, it had an expanded and deeper significance. It encapsulated the entire purpose of their school: 'to become like God' (*homoiôsis theôi*), meaning to become as perfect and rational as God. Indeed, part of the above quotation alludes to the passage in Plato which was so significant to Platonists.

> Each one . . . by learning the harmonies and revolutions of the universe, should make alike (*exomoiôsai*) the percipient (the thinking subject) to the perceived (the object) (*tôi katanooumenôi to katanooun*), according to his original nature, and having become alike should attain the goal (fulfilment) of supreme life (*homoiôsanta de telos echein . . . aristou biou*), which the gods have set before humanity both for the present and future time. (Plato, *Timaeus* 90d)

A theory of perception framed in this way extends to metaphysics, to the nature of beings and causes. Such extension is central to Proclus' whole philosophy, as we saw earlier. 'Con-joining' does not involve a total identity of subject with object in all respects (likewise, in metaphysics, what 'reverts' 'joins' its origin without loss of distinction). Normally the object is different in essence from the subject. Thinker and object are different when persons try to comprehend objects through piecemeal arguments. The cause of perception, the object of thought, and that which is affected by it, the percipient, are not identically the same but are similar.

> For since that which produces is necessarily superior to the product, they can never be simply identical with each other, or equal in power. And if they are not identical and equal, but different and unequal, either they are entirely distinct from each other or they are both united and distinguished.
>
> But if they were entirely distinguished, they would be irreconcilable, and there will be no accord (*sympathes*) whatsoever between the cause and what proceeds from it. Accordingly the one will not participate in the other, if they are completely different . . . But it is necessary that the effect should participate in the cause, insofar as it derives its substance from the latter.
>
> Let us suppose that the product is partly distinguished and partly united to the producer, and suppose it were so in equal measure, then it would in equal degree participate in the cause and fail . . . If it were distinguished more than it is united, the result would be more alien (*allotrion*) than akin (*oikeion*) . . . Insofar as derivative principles with their very being are cognate to their causes and have an affection (*sympathes*) to them . . . it is evident that the products are more united to the producers than distinguished from them . . . Therefore the producing cause brings into existence like things (*homoia*) before the unlike (*anomoiôn*). (Proclus, *El. Th.*, prop. 28)

Between strict identity and non-identity, in respect to a certain term, there can be innumerable degrees of similarity and dissimilarity. Clearly this is of especial value to a system wrapped around the issue of unity–diversity. Diversity does not entail fragmentation into disparate individuals, nor does unity entail homogeneity and confusion. This way of looking at things no longer discourages the construction of highly complex systems. Every minor distinction can now occupy a niche, like numerous political parties in a generous proportional-representation system of government.

For Proclus, similarity (*homoiotês*) is the bond of the grades of being and consciousness. With similarity, different modes are kept contiguous, and the universe as a whole remains unified and intelligible. Conversely, the chain of being proceeds to plurality by diminishing similarity. Moreover, Proclus is not content to leave his law of increasing–decreasing likeness to the realms of pure theory but finds concrete examples in which to apply it. We will see it, for example, in his physics of the celestial bodies and the four Elements, where he attempts to quantify similarity.

Proclus distinguishes two kinds of similarity (*dittê homoiotês*). The one which we have already met is the similarity of an entity to its specific cause(s), and its principles. The other is the similarity between the entity and the ultimate unity, where everything is completely united. The closer to that ultimate unity, the stronger is the affinity between entities; the further from the ultimate unity, the more plural and the weaker.[6]

> And you will find that all processions and returns are effected and completed by the cause of similarity. For everything which strikes forth and everything that reverts is substantiated by similarity to its producer. (Proclus, *Plat. Theol.*, 6.347 (Portus))

> And there is one series and one indissoluble order . . . extending from on high the First-most Cause (*prôtistês aitias*) . . . For because it is One it is the supplier of union; and because it is the Good it constitutes things to be similar to it prior to such as are dissimilar. Thus all things are in continuity (*synecheian*) with each other. (Proclus, *Plat. Theol.*, 6.344 (Portus))

> All things aspire (*ephietai*) after their leading principles, and there is a token of the appropriate monad in everything, but in some it is clearer (*tranesteron*) and in others more obscure (*amydroteron*). Likewise similarity is substantiated . . . in proportion to the degree of procession. (Proclus, *Plat. Theol.*, 6.352 (Portus))

> The series extend from above as far as to the last of things (*eschatôn*) . . . but the procession is diminishing the similarity (*homoiotêta elattousês*). (Proclus, *Pat. Theol.*, 6.352 (Portus))

> For if the procession of beings is to be continuous (*synechês*), and no void (*kenon*) is to enter either in the incorporeals (*asômatois*) or in the corporeals (*sômasin*), it is necessary that everything which proceeds by nature, proceeds through similarity. (Proclus, *Plat. Theol.*, 3.6.21–4)

Nevertheless, how can similarity remain consistent? Surely we cannot combine sameness and difference. Do they not contradict each other? Either something is the same as something else or not. Contradictories (*antiphaseis*) exclude a middle, because the presence of the one necessarily and absolutely denies the other, so there ought to be no 'similar'. Aristotelian logic offers other kinds of opposition, which do not exclude a middle (classes of opposites: *Categ.* 10–11). Contraries (*enantia*) allow the possibility that both are false, or that both are true. In these cases, there is a middle. In *Metaphysics* 10.4–7, and 11.12 (1069a1–10), Aristotle encapsulated his ideas on contiguous change. Change occurs between opposites (to put it simply, from one to one-other), for a subject-substance can admit contrary qualifications. Change does not occur through contradictory opposites because they exclude a middle: they prevent succession in process. Change takes place through contrary opposites, precisely because they allow median, successive states. The intermediaries are compounded out of their parent contraries, and, although they are different species, they are in the same overall kind-genus as their contraries. Is this where Proclus' 'similar' finds its niche?

> The likeness is the contrary of unlikeness; we must establish by recalling, in the first place, that likeness as such never participates in unlikeness, nor unlikeness as such in likeness. But you could say this of other things that are not contraries; for example, man does not participate in the Idea of horse, nor horse in that of man; hence to what has been said we should add that whatever is receptive of both is unlike when it is not like, and like when it is not unlike . . . for what is not-man is not a horse, nor the not-horse a man. (Proclus, *In Parm.*, 741.9–21)

> It is grave when contradictories coincide, more grave (*deinoteron*) when contraries do, and most terrible when both contradictories and contraries follow from an argument. When we showed that the same thing is like and unlike, we were establishing contraries (*ta enantia*); when we showed that it is like and unlike and neither, we were adducing contradictories (*tas antiphaseis*), since like and not-like, unlike and not-unlike are contradictories. (Proclus, *In Parm.*, 726.13–21)

> The unitary and most simple type of hypothesis is one that states what is predicable of something (*tini*: i.e. the subject) . . . A dyadic hypothesis is one which provides a division into two, when one does not simply say what holds for something, but also distinguishes what being is that subject (*tini onti*) of which something is predicated. The primary division is that by contradiction into the propositions about what the subject is and is not (*kat' antiphasin, eis to einai to prokeimenon kai mê einai*).
>
> Let us take the dyadic hypothesis, then. Each of them generates for us three further hypotheses. Previously we considered the subject (*tini*), what it is and it is not, and so we divided our hypothesis into two. Now, we take the predicate (*symbainon*) three ways . . . as either true or not true, or as both true and not true. For the predicate is either affirmed or denied of the subject, or partly affirmed and partly denied. For the discourse does not say this, that the pair of contradictory attributes are simultaneously true and that both opposite statements are true of it, but that the same thing in one way is true of the same thing, and in another way not. (Proclus, *In Parm.*, 1001.2–26)

Scrutinised closely, the last extract contains something odd. The contraries and contradictories, as Proclus presents them, do not wholly belong to the typical Aristotelian scheme of opposition. In the first two passages, he correctly observes (and in an Aristotelian context) that the terms x and not-x are contradictories. Not-x is the negation of x: it is not something determinate. For example, not-human is the contradictory of human, but it is not a horse, flower or sand, precisely because a horse, flower and sand do not by themselves negate a human totally. That is what he means in the second passage when he says that the contradictories are like and unlike and *neither*. Why is the coincidence of contradictories less terrible? Precisely because they do not necessarily fight on the same ground as the contraries.

The same ground, the subject, is where contraries and contradictories are distinguished in the third extract. The key difference is that Proclus arranges them into levels of opposition. In this he departs from the Aristotelian scheme, which has no graded structure. It is his defence of the 'Parmenidean dialectic', which is supposed to agree with the *Sophist* dialectic.[7]

At the base level, Proclus puts the basic form of predication: simply to assert something (predicate) of something (subject). Since this is not informative enough, he next posits the distinction into what the subject is or is not; this division he finds to be a contradiction. What is intriguing is that in purely logical terms there is no reason why the subject of predication should be separated in this fashion, or why this is a contradiction. It makes sense, however, if we consider the nature of the terms. Establishing what is the subject of predication is pretty fundamental. However, this includes a more basic assumption: that there is some subject to talk about. Further, to assert a property, condition or characteristic presupposes (according to this line of argument) a subject that can be qualified in such a way.

Proclus distinguishes a *qualified* subject, which is composed logically of the subject of predication and its qualifications (the predicates), from an *unqualified*, bare subject. Of a qualified subject, there is much to say. Of an unqualified subject, there is very little to say: either it is, or it is not. Here the system of opposition collapses into two options: the affirmation or denial of the subject. That is why, for Proclus, the first division is a 'contradiction'. At this level, being and not-being exhaust all possible options.

Notice, however, that at the level of the predicate Proclus finds not two, but three exhaustive options. A certain property and condition may be true of the subject, or not true, or be both true and not true. These are not contradictories, but contraries (in the inclusive sense). They refer to the same subject, which has been established in the previous, more primitive level of division. Proclus well defines in what sense something can be both true and not true of a subject. Contradictories cannot concur, and opposites cannot be completely true simultaneously. Opposites are both true in a modified sense, partly true in one respect and partly in the opposite: this we met earlier in his definition of similarity. So, it is only at the level of the qualified subject that the included middle can subsist, and with it the bond of similarity.

Although Proclus calls this graded arrangement of opposition Parmenidean, he admits that none of Plato's successors put it into practice, and that he is the first to do so. His ambition is to show that this method includes and supersedes the Aristotelian, which proceeds through definition, division, demonstration and analysis. His dialectic is intended to give both a valid description and an exhaustive account of things. For Proclus, the dialectical science is the foundation of all knowledge, for it is that which substantiates axioms. Given that Platonists, like many other Greek philosophers, did not separate logical from metaphysical considerations, we can discern why Proclus sees fit to distinguish the unqualified subject from the qualified, and regard statements about the former as more fundamental than of the latter.

Another problem is this. Does similarity–dissimilarity truly displace identity–non-identity when it comes to relating things? In a weighty statement, Proclus concludes that it does not. Although similarity may apply to most things, it does not cover everything. On the other hand, identity does apply to everything. Similarity does not replace identity, it supervenes on it.

> In general, if likeness is superior to sameness, everything that partakes of sameness would have to partake of likeness also, but things that share in likeness would not all partake of sameness . . . But all things in the cosmos have sameness [presumably Proclus means self-identity], but not all have likeness. For where is the likeness in the things devoid of quality (*apoiois*)? Consequently, likeness is not superior to sameness. On the contrary, sameness is more of a cause and more powerful than likeness, just as, by the same reasoning, otherness (non-identity) is superior to unlikeness. This could not be otherwise. (Proclus, *In Parm.*, 737.23–8)

Shortly before, Proclus has conveyed a unique piece of information. He considers in what respect entities are said to be similar, and in what identical. He replies that 'sameness is a unifier of essences/substances (*ousiôn*) but likeness of powers (*dynameôn*) . . . things are identical (*tauta*) when they have common essence/substance (*ousian echein koinên*), but similar (*homoia*) when they have common powers' (Proclus, *In Parm.*, 736.13–25).

It is now clearer how Proclus intends to ground logical distinctions in being, and to imbue the metaphysical with logical necessity. Entities devoid of quality have no 'powers' by which to interact with others. Quality-less entities are primitive. They can only be described by their distinctive essence, and be compared by asserting whether they are the same or not. This excludes the middle option, that they are similar.

On the other hand, entities with qualities can (also) be described by their various predicates, their 'powers'. They can be compared in many ways: they may be the same according to some but different according to others; they may be *more or less* alike. Entities endowed with qualities, being subjects with predicates, are the ones that we can talk about. Although they are more complex than the unqualified (by Proclus' dialectic), they are constituents of the comprehensible universe. For things to be reached by minds, they must have something to share with minds. They cannot have sharp boundaries demarcated by strict identity and non-identity. Their conditions and universal properties extend in degrees; some have a property more, and others less.

Does this mean that there is no difference between things (with qualities)? At first this is not problematical. Similarity contains a large portion of sameness. Causation and cognition are made possible through contiguity. The more serious implication is that there may be no substantive differences between grades of existence. What we perceive and call different things may be no more than one substance in diverse conditions with different properties. This view is, on the whole, very much consistent with Neo-Platonic metaphysics, which is centred on the One. For example, in a passage where Proclus examines the ontological significance of unity (personified in divinity), first he stresses that 'nothing is severed from the gods' because anything that does would quickly disappear into the 'yawning gulf of non-existence'. He then declares: 'things are established in some way in them [the unities = gods], and to put it in a nutshell, the things in themselves have proceeded [from unity to plurality], but they remain in the gods'.[8] We shall look at this theme later, but as it is put here it strongly suggests a system where the One is the sole substance and all the grades of being merely its qualifications, including that of real existence.

Sympathy

Similarity is frequently said to support and maintain the 'sympathy' of the world. Sympathy means literally 'having been affected jointly'. As a scientific concept, it originated in the circles of medical practitioners to describe the irritations, pains and diseases that affect the body in different parts not in direct contact. The famous concept of cosmic sympathy seems to have arisen among the early Stoic philosophers, and was established by the time of Posidonius (second to first century BC). What complicates the genealogy is that sympathy was also the explanation for magic, astrology and extra-sensory phenomena. Essential philosophical ideas may be traced to Plato and his view of the cosmos as an integrated living being. However, the association of similarity with sympathy in Neo-Platonism is almost certainly due to Plotinus.[9] With Iamblichus, there grew the idea that there is a multitude of entities filling every possible conceptual and ontological gap, each possessing its appropriate 'powers'. Since such a universe is a plenum, filled completely, the Aristotelian requirement that action should take place through direct contact can be 'harmonised' into the system, provided that 'contact' takes a wider sense. Sympathy seems to become a specific unifying principle between suitably disposed entities, in addition to being a general, diffuse, cohesive force, as in Stoicism.

For Proclus, sympathy and generally any kind of influence with the power to affect are essentially a contact-like action. Their activity occurs in a plenum and continuum. But these contiguous 'touchings' are not necessarily corporeal. In most cases, including the influence of the celestial bodies, the transmission of sympathy and any kind of power takes place through non-physical channels or entities. 'Plenum' and 'contact' have physical and metaphysical meaning.

Such contact-like action may appear as action-at-a-distance, when the intermediary steps in the chain of transmission remain undetected by the physical senses. Whether the Neo-Platonists originated, or anticipated, the concept of action-at-a-distance, which is central to Newtonian physics and modern problems of causation, is thus a vexed question. In some histories of science, the sympathetic linking across the body of the universe is equivalent to action-at-a-distance. The Neo-Platonists are said to have progressed well ahead of the Stoic sympathetic field of force (the 'pneuma') and to have been the first to formulate the concept of action-at-a-distance. A criticism of this claim is that the incorporeal aspects of contact and touching do not just relate to cosmology and metaphysics, but also to psychology.[10] So, in this sense, the debate had already started with Aristotle and been continued by the Stoics. Plotinus and Iamblichus picked up these psychological arguments. Besides, to Neo-Platonists, the grand metaphysical domain is the content of an alive Intellect. Nevertheless, the long-range action of Neo-Platonic sympathy and causality does satisfy several key requirements for action-at-a-distance, especially that it must act continuously. However, it is transmitted through a plenum of suitable entities. This fits better with action transmitted though a field.

A compromise is, perhaps, 'contact at a distance'. This can describe Plato's theory of vision and light (*Tim.* 45c). It fits with ancient theories of perception as species of touching contact.[11]

> For as the *Timaeus* says (58d), heaven envelops all the elements which are under it, so there is no void space. Just as the visible heaven connects all things that are under it, and is the cause of continuity (*synecheias aitios*) and of sympathy – for the insertion (*paremptôsis*) of void interrupts this continuity and the cancellation (*anairesis*) of the continuity cuts through (*diakoptei*) the sympathy between bodies – so does that intellectual heaven connect all the multitude of beings in one indivisible communion, shining upon them the share of the bond (*synechês*) befitting each. (Proclus, *Plat. Theol.*, 4.59.18–60.1)

4. IN THREES AND FOURS

To summarise, in his response to the problem of unity–diversity Proclus aims to avoid both conceiving things as wholly distinct, and doing away with their differences. His view of similarity gives us an insight in to his general philosophical method. Similarity and dissimilarity are not analytic elements: identity and difference are. However, entities that relate in some way are endowed with universal qualities. Similarity (and dissimilarity) becomes the appropriate benchmark by which composite but comprehensible entities are measured. To paraphrase the Neo-Platonic golden rule, pure identity may be in everything, but, for entities mixing with minds, a mixed identity is appropriate.

Proclus goes beyond the binary logic of either/or, yes/no. Between two extremes there is a third, mean term, an 'intermediary' (*mesos*).[12] This yields the arrangement: x, x and not-x, not-x. In the context of Proclus' thought, it stems from the fundamental polarity unity–plurality, or more strictly, one and not-one. That is: one, one-and-not-one, not-one. This is origin of the 'triad', the threefold structure of things, which appears consistently in all of Proclus' writings, whether metaphysical, logical, physical or ethical.

The only threesomes that remain threes are those expressing a simple mixture of x and y. In most other cases, the threesomes are compressed foursomes: x, similar to x, similar to not-x, not-x. Between two extremes, there are at least two intermediaries: each is similar to its proximate end. In fact, the similarity rule is meant to apply many times over, and fulfil its explanatory purpose: to encompass all forms and levels of existence. So a train of 'intermediaries' can unfold, each lying 'between' the previous and the next. Their number cannot regress to infinity since 'every plurality partakes in some way of unity' (*El. Th.*, prop. 1). In terms of the unity–diversity issue, the intermediaries aim to account for the graded transition from one to many. A single cause first has proximate effects. These act as causes to more remote effects (which are manifold, since not-one). The median state is a manifold since it is not-one, but because it is closer, more similar, to the original cause, it is less of a manifold (it has fewer members).

Thus, similarity and the train of intermediaries are essential to Proclus' system. Without them, intelligibility and existence would vanish – like a chain of inference that is cut. Nevertheless, Proclus does not accept that every thing that we can think deserves a place in reality. Rather, true concepts depend on objective realities, not on a particular mind.[13] Objective realities exist independently, for they have their own 'foundation' and 'substantiation' (*hypostasis*). With such reasoning, Proclus aims to account for a universe that contains discrete, well-defined entities but also forms an intelligible continuum.

5. PARTS AND WHOLES

The problem of unity–diversity lies in its dualism. How can unity and diversity relate when they are so incompatible? We have seen how Proclus tries to attack it with the rule of 'all in all' and with that of similarity. Another, more traditional attack is by distinguishing things according to their common properties.

We make sense of the immeasurable, ever-changing variety of things around us by grouping them according to properties which they seem to share. Things can then be distinguished by common characters. The questions that arise are: what are such groups, or species? How do they relate to individuals and members, and to more general groups? What is the status of the common character? What is its relation to the group and parts? When we extend wholes and parts to the way in which we use general terms in language, and how we apply adjectives and modifiers to all sorts of different nouns (things), we talk of universals. The problems of universals (for example, greenness) and the particular instances in which we encounter them (foliage, fruits) become more acute when they seem to refer to substantive things and are not just conventions of language. Do they exist independently of what individual thinkers think about them? The realists say (broadly) yes. For Plato, such universals are not mere qualities but the 'really real' things. By contrast, their instances as we see and feel them are as appearances, 'phenomena'. The phenomena depend on the real for their existence, but the real can exist independently. Aristotle, on the other hand, rejected the independent existence of universals. Proclus, and the Neo-Platonists, maintained the Platonic position, but refined it considerably with the aid of Aristotle's criticism. As we shall see in more detail later (section 7 below, Causation), universality and reality are intrinsically linked, but they are relative and multi-layered. Each layer is more whole and real than the next. The layers are arranged in a mathematical sequence. They follow the order of logical priority. However, their relation is not just logical and mathematical, it is also causal.

> One of them was to divide the one into many; this is the property of dialectical division (*diairesis*), to separate a genus into its species. The genus is the 'single idea' spread through many separate things and

> existing in each of them; for the genus is not a bundle (*athroisma*) of species, like a whole of parts, but is present in each of the species as existing before them and participated in both by each of the separate species and by the genus itself. The species (*eidê*: forms) are the many ideas different from one another but comprehended by one single embracing idea, which is the genus; though it is outside them, as transcending the species, yet it contains the causes of the species: for to all those who posit Ideas, real genera are thought to be both more senior and essential than the species ranged under them; the realities existing prior to species are not identical with the characters that exist in the species by participation. Thus we see that to distinguish between these two kinds is the task of the divisional part of dialectic; the distinction between the remaining two belongs to the definitional (*dioristikês*) aspect. This art perceives a single unified idea pervading many wholes, collecting the many ideas each of which is a whole, into a single definition. (Proclus, *In Parm.*, 650.18–651.4).

Proclus here considers explanation as part of the Platonic dialectic in the *Phaedrus* (266b ff.) and the *Sophist* (253c) in the light of his interpretation of the *Parmenides.* How do 'division' and 'collection' explain? Imagine trying to understand what an unfamiliar piece of furniture might be. To be told its unique trade label will help you to spot it in a catalogue or market should you want to buy it. Still, it will leave you in the dark about what it is and what to do with it. On the other hand, to be given a list of its materials and components will also leave you in the dark. Yet these two ways of referring to the piece of furniture are reliable and comprehensive. With its characteristic name you identify the unit. With the list of components you know whether what you get is what you asked for. Moreover, if the piece of furniture is so innovative that it matches nothing in your experience, then these ways of reference are the ones that secure it. Nevertheless, neither enlightens. Something considered as a unit or as a set of individuals is obscure to understanding. Suppose now that you have the chance to speak to sales staff or to people who have used that piece of furniture. They might tell you that it is a chair when it is folded this way, a table when it is hinged that way, and a perambulator when the wheels are slotted down. Only then do you realise how wonderful is the Victorian children's highchair.

Explanations that enlighten involve amplification. One way is to unravel meanings that are implicit. In Proclus' technical terminology (which originated in Plato's dialectic and Aristotle's logic), this is the 'division' (*diaeresis*). We take a general type, the 'genus', and divide it up by considering its various qualifications, its specific forms, the 'species'. For instance, 'living being' can be divided into two-footed, four-footed, etc. Each species has something of the genus but in a particular manner. The single general type is distributed into many species.

Another way is by collecting meanings. This is the 'definition' (*horismos*). We arrive at a descriptive name when we have brought together general features that characterise the item. A famous example is the Linnaean classification (by biological species and genus, and higher groupings: family, order, class, phylum/division etc.); however, it is misleading for philosophy. The other commonly-known examples are dictionary definitions, for example, a chair is a seat, having four legs, and often having arms and a back. The definition is laid out like an equation. The word or phrase on the left equals, is (predicatively), the description on the right. Greek philosophers (including Neo-Platonists, notably Porphyry) who worked on Aristotle's logic called the two sides of definition 'convertible' (*antistrephein*). We can replace a thing with its definition, and reciprocally, without loss of meaning. The elements on the right-hand side are general terms (seat, legs, arms, back), but their particular collection is intended to distinguish the term 'chair'. Although something may fall under many general descriptions, the art of definition, and of the lexicographer, is to find the ones that are truly essential and characteristic of it. So, the meaningful individual becomes a particular bundle of characteristic but general properties.

Recall what Proclus observed about the unqualified subject and powers (section 3 above, Similarity and identity). Something unqualified can be distinguished solely by sameness or difference. Meaning becomes possible once we have a subject with powers, that is, with qualities and properties. In other words, what is fundamental is unintelligible. We gain intelligibility only by considering it endowed with properties shared with others. The cost of intelligibility is diminished independence.

Proclus achieves this by distinguishing a looser kind of unity that admits the presence of parts as qualifications. This is the 'whole' (*holon*). For it he reaches back to Plato, *Parmenides* 137c, *Sophist* 244–5, but especially, the *Theaetetus* 204–5, and to Aristotle, *Metaphysics* 1041b. A whole is not strictly a unity, which precludes qualifications and parts. It is like unity but contains diversity. The whole admits various degrees, from the very whole to the least whole. The maximal whole cannot be divided, analysed into its parts. The minimal whole is the closest there is to complete diversity. Pure diversity itself is banished: it is utterly unintelligible.

> Every plurality participates in some way (*metechei pêi*) of unity. For suppose a manifold in no way participates in unity. Each part of itself will be a manifold of parts and so to infinity . . . each part of the manifold . . . must be either one or not-one; and if not-one, then either many or nothing. But if each part is nothing, the whole is nothing; if many, it is made up of an infinity of infinites (*apeirakis apeirôn*). This is impossible. Neither something which is a being is made from an infinity of infinites – for the infinite cannot be exceeded, yet the single part is exceeded by the sum – nor can something be put together from nothing. (Proclus, *El. Th.*, prop. 1)

Proclus here argues against pure diversity by employing Zeno's infinity paradoxes, long before Kant and Cantor tackled infinities. Further arguments against absolute diversity are logical. Completely unrelated things do not make up a set *of* anything. Others are more ontological. Unrelated things have something in common in that they all exist and that are things.

Nevertheless, this leaves unanswered the question of how the whole relates to the parts. Is it more than the sum of the parts? Can there be something of the whole not allocated to a part? How do the parts exist in the whole? Proclus distinguishes at least two senses: the essential whole that cannot be analysed into parts because it contains the cause of its unity; the whole along with its parts. The latter can be of two sorts: the sum of parts, or a part that itself can be considered as a whole. So there are three senses of wholeness: whole prior to the parts, whole of the parts, and whole in the parts.[14] According to Proclus, we cannot tell what is the universal itself when we find it distributed among particulars. It is qualified, contaminated by the particular conditions in which it is found. However, when it is not specifically qualified, the pure property is the general type itself. This pure universal is not an abstraction following the collection of parts. It is not an *a posteriori* whole. On the contrary, for Neo-Platonists, the general type is the ground and cause of the particular species.

The 'whole prior to the parts' is most important in Proclus' system. Typically he indicates it by the term 'monad', which in Greek means numerical one. He also has the term 'henad' (*henas*), which means 'unit'. He takes both from Plato *Philebus* (15), where Plato used them interchangeably. However, for Proclus, the monads are undivided *wholes*, that is, they contain parts, they are not pure unities. Secondly, they are principles relative to a class-property, that is, the monad of intellect, of life, etc. On the other hand, the henads are pure unities. 'Monad' and 'henad' converge on the occasions when Proclus refers to the monad of unity as a class-property, viz. the late Neo-Platonic One, and when he emphasises that unity is at the centre of any being, including the 'monad'[15] (see also section 6 below, Participation).

A property in its pure self is a principle, the archetype of its class. In another sense, it is common to its family or series. The members express their archetype unequally, because they have it in different conditions. For example, whiteness is common to white walls, white paper and white baby nappies, but unequally. Whiteness in itself is unconditioned. An attribute can be regarded as a series, headed by its undivided principle (e.g. 'monad' of intellect), followed by the diverse forms where the attribute is found (intellect of dog, intellect of Socrates, intellect of God). However, in Platonic metaphysics the attribute is more real, because it is what defines the subject, so we could visualise it as a 'thing' naturalised in 'another', alien household, the subject.

Wholeness (*holotês*) and the particular (*merikos*) serve to account for the gradation from unity to diversity. As existence becomes gradually less unified and pluralised, the further it moves from unity. Each grade becomes correspondingly less universal, that is, more particular. In this sense it becomes less powerful, for the character becomes diluted and divided into specific forms.[16] Note Proclus' metaphorical use of mathematical and physical language.

> Those things which are more remote (*porrôteron*) from the One are participated in by more composite beings whose power is diminished (*dynamei elassoumenôn*) but which are multiplied in number and quantity (*arithmôi plêthei pollaplasiazomenôn*). For in general, additions (*prostheseis*) to them are subtractions of power (*aphaireseis dynameôn*). And that which is nearer to the One . . . is more unit-like (*henoeidesteron*) and exists with the more whole (*holikôterais*) causes. And it takes place according to a proportion of power . . . for they who are the causes of a greater number (*pleionôn aitia*) imitate the power of the cause of all. (Proclus, *Plat. Theol.*, 3.18.12–20)

6. PARTICIPATION

Proclus distinguishes the following threefold arrangements of participation. The participable/participated is in passive voice, and participant in active voice.

1. The imparticipable (*amethekton*), the participable (*methekton*), the participant (*metechon*);
2. The imparticipable, the self-substantiated participated

> (*authypostaton*), the participated which is a mere irradiation (*ellampsis*).

The relation 'to partake of' or 'to share in' (*metechein*) had been used by Plato to describe how a sensible particular comes to have an ideal Form (participation between Forms is a controversial possibility).[17] Physical things are restricted by time and place and cannot contain the whole Form, any more than the eye can grasp all of the sun's radiance. Moreover, the Forms are separable from their particulars, though physical things depend on the Forms for their determinate existence. The eye depends on sunlight for its essential function, but the sun does not depend on the eye for its light. Such a relation between a 'lower' and a 'higher' fits well with the hierarchical mode of explanation in late Neo-Platonism. 'Participation' (*methexis*) emphasises that an inferior cannot possess a superior entire. The problem was how to describe such an asymmetrical relation adequately. Plato experimented with many expressions, 'communion' (*koinônia*), 'imitation' (*mimêsis*), 'imaging' (*eikasia*). 'Participation' came under heavy self-criticism in the *Parmenides*, mainly because it inferred a division of the Form itself (e.g. the Sail Cloth and Third Man paradoxes). If a Form is shared in, then it has parts, or it joins with its partaker in some way, thereby losing its separability and simple integrity, two of its essential properties. However, on Aristotle's evidence, 'participation' seems to have retained favour among Platonists for the relation of particulars to ideals, as that between a derivative and a primary (cf. *Sophist* 251–9).

Proclus dismisses the criticism of participation by pointing out that similarity between a copy and a pattern (Plato, *Parm.* 132d5–e5; Proclus, *In Parm.* 912.31ff.) is not the same as between two coordinate things. That is, comparing a copy and an original and saying that they are alike is not the same as comparing two copies of the same original. Sensible particulars participate in immanent forms. The latter derive their being from the transcendent Form. The intermediary universal appears in Proclus's theory of wholes and parts and of participation. According to an interpretation of the controversial unwritten doctrines, Plato had anticipated this solution with his theory of mathematical objects (cf. Aristotle, *Metaph.* 987b).

How does Proclus conceive participation? In the *El. Th.*, prop. 129, Proclus gives a good example of how participation and similarity go together. He cites four levels: unity, substantive being, intellect, soul and body (see Chapter 3). Each level has its typical substance, and each participates in the one 'above' it. However, the whole series of participants is characterised by the distinctive property (*idion*) of its principal head –

unity. This unity happens to be 'divine', more accurately, divinity. All the participants are in some way 'divine' too. But the participants are not characterised by the head-property equally: some are more like it, other less like it. To convey the different degrees of similarity, Proclus stretches the language of comparatives to its limit: superlative-x, x, x-like. Moreover, each of the participants is a different substance with a new property of its own (e.g. intellect, soul). This can now be a head-property for subordinate participants (intelligent soul; ensouled body). So, participation and predication cascade and yield entities as bundles.

> All that is divine is itself ineffable and unknown to any secondary being because of its supra-existential unity, but it may be apprehended and known from the existents which participate in it . . . Their distinctive properties (*idiotêtes*) become known from the beings dependent on the divines, and this necessarily (*anagkaiôs*). For the differences (*diaphorotêtes*) of the participants (*metechontôn*) are co-divided according to the distinctive properties of those which are being participated in (*metechomenôn*). And neither does every thing participate in every thing – for there is no correlation (*syntaxis*) among things completely dissimilar – neither does any chance thing participate in any chance thing, but the cognate (*syggenes*) is attached to its particular (*hekastôi*) cognate, and proceeds from it. (Proclus, *El. Th.*, prop. 123)

In the above quotation, Proclus generalises but provides more intriguing detail on how the participant (*metechon*) relates to that which is being participated in (*metechomenon*). The one entails the other, so what is asserted of the one follows 'necessarily' (*anagkaiôs*) of the other. Characteristic attributes are 'co-divided', so we can come to know the one from the other. This is even more pertinent, because Proclus here tries to explain how something truly transcendent, divinity, can relate to the ordinary world and be known in human terms. Whatever Proclus says here about participants and participated things has consequences for theology and the theory of being and knowledge. His mentions of 'necessarily', 'properties', 'differences' and 'co-division' are precise terms that reveal what participation is, and encapsulate its history from Plato to Neo-Platonism.

Property and definition

'Participation', if it remained part of Plato, reappears in the theory of definition by dialectical division (especially in the *Sophist*). A generic Form is subdivided into more specific ones until the lowest species is reached. This was not formal predication but an adaptation of it to the theory of Forms and copies. Participation is the 'communion' not of peer entities but of a primary and a derivative, an asymmetrical share-in. Dialectical division seems to have been intended as an analysis of reality. Instead, it raised the question of whether the Forms and their divisions are themselves real or simply the results of logical analysis. Definition by dialectical differentiation was further developed by Plato's successor, Speusippus. This more logical version is what Aristotle may have had in mind (at least in his more Platonic-influenced work, the *Topics*) when he himself defined 'participation' as the admission of what defines the essence of the participated thing.[18] Again, this is not predication in the sense of acquiring any random attribute. Definition shows the essence of a thing's substance. In a manner well liked by Neo-Platonists from Porphyry onwards, Aristotle accepted that 'participation' relates genus and species asymmetrically. The species partakes of the genus and is essentially defined by it, but the genus does not partake of the species. But, for Aristotle, there are no general properties transcending their particulars, so the genus is not more than the collection of its disjointed species. According to Aristotle, 'definition' consists of distinguishing attributes, the 'differentia', applied to a 'genus'. The 'differences' distinguish specific forms out of the genus: so Aristotle spoke rather rashly of the genus as matter (*Metaph.* 1038a7–8). Neo-Platonists loved this as another case of a Platonic slip. Did not Plato say much the same in the *Timaeus*, where the Creator imposes specific forms on pre-existing powers in the universal 'receptacle'?

Aristotle distinguished 'property' (*idion*) (in Latin: proprium) from 'definition'. The former is an attribute peculiar to the species, but is not essential, so does not belong to its definition. According to the classic example, 'human is a two-footed animal' is a definition, but 'human is a laughing animal' refers to a property: laughing characterises humans but is not essential, as being two-footed is. Nevertheless, only humans laugh. So, a thing can be interchanged with its definition, or with its properties.

This Aristotelian distinction we still see in Porphyry's *Isagogê*, but with a shift in emphasis. Accrediting certain 'predecessors', he distinguishes four meanings of property, particularly the one which holds true for an entire species 'for it alone and for always'. The point which he is making is that definition is composed of properties of a special sort: those applying to the essence and substance of the thing. If a property applies 'naturally' to a species and 'to it alone and for always', then surely it is part of its definition. Further, he explains: 'even if a human being does not always laugh, still he is said to be *capable of* laughing (*gelastikon*: the verbal adjective of 'to laugh'), not because he is always laughing but because it is in his nature (*pephykeinai*) to laugh. This always belongs to the nature (*symphyton hyparchei*) of a human as the capacity to neigh belongs to a horse.' Deeming properties as capacities removes the objection that not all members of a species exhibit the given property: not every human is two-footed, nor is he or she always laughing. Porphyry's 'predecessors' are the Stoics, and most probably Chrysippus, who was said to have redefined 'definition' as the 'representation of a characteristic property' (*apodosis idiou*). Such a property was intended to be not only peculiar to a thing, but essential:[19] the mark of definition. Porphyry concludes: 'they say, too, that these characteristics are "strictly properties" (*kyriôs idia*) because they are also convertible. For if there is a horse, there is the capacity to neigh, and if there is the capacity to neigh, there is a horse.'[20] On the other hand, 'differences' distinguish species within a genus; but, as Porphyry points out, 'difference is a consequence (*hepetai*) of those things whose difference it is, so differences are not also interchangeable with them'.[21] The same 'difference' can distinguish sets of different but related species; it need not belong to one exclusively. Two-footed applies to humans, but this difference will distinguish all bipeds from other animals. Nevertheless, the 'differences' are not mere accidents, but 'essential qualifications' of the substance which they differentiate (Porphyry, *In Categ.*, 95.10).

So 'property' comes to occupy the throne of philosophical definition. Properties are truly characteristic of essences. Moreover, they apply to a much wider range of entities. Classical definitions cannot be given to general things like the 'ultimate genus' of pure substance, because there is nothing more generic to take differentiation. We may offer a characteristic property, however, even for these. Property belongs to the thing which it characterises, is interchangeable with it, but does not depend on division. This much we see in Iamblichus' student, Dexippus, who comments that a 'real property' (*ontôs idion*) is a 'property in the strict sense', that is, it is 'true of all and only', and can apply even to the general category of substance. Proclus' student, Ammonius, declares that property is 'somewhat like definition' (*eoike pôs tôi horismôi*). Proclus appeals to Platonic dialectic and informs us that while 'division' is the 'procession' from one to many, 'collection' leads to the definition of a characteristic property (*mia idiotêtos perilêpsis horistikê*).[22]

All this helps us to discern Proclus' own understanding of 'participation'. Unfortunately, we do not have surviving tracts of his commentaries on Aristotle's logic, so we lack information about his precise views on these key distinctions. Nevertheless, the background on the shift of emphasis from 'definition' to 'property' (from Aristotle to Stoics and to Neo-Platonists) is enough to clarify the implicit ideas in his references to properties and differences.

Participation is the transference of what is essential of a thing to a subordinate. It is not predication in the formal sense that any subject can take any predicate: 'any chance thing does not partake of any chance thing'. Nor does it relate things in general: 'everything does not partake of everything'. It is an entailment, in that the participant is necessarily deduced from the participated, and conversely the former implies the latter. What defines the participated is its unique property. The participant has not exactly the same definition as the participated. If they did, the two would be completely identical (cf. Aristotle, *Top.* 1.7). The former is characterised by the latter's definition, and is a derivative case of it (cf. Porphyry, *In Categ.*, 66.19, and 'paronymy', 69.20–70.24). So Proclus says that the *differences* of the one are determined by the *properties* of the other. For a given property, there are many participants consequent upon it. So the essential characters differentiate a range of species.

If all participants of the same series have the same property, does it mean that they are clones? No is the answer. First, non-essential attributes are allowed to be 'more or less' (*mallon kai to hêtton*; cf. Plato, *Philebus* 24c ff.; *Phaedo* 93): for example, a person can be more or less tanned. However, according to Aristotelian logic, as maintained by the Neo-Platonist Porphyry, all members of a species must have their essential properties 'synonymously' (in Latin, 'univocally'): for the same name they have the same definition. That a person laughs more or less than another, or at different times, just means that the property-capacity for laughing is actualised differently on different occasions. Humans have the capacity to laugh equally. But Proclus rejects this. The same property is shared, but is shared unequally. People laugh in different ways and intensities not (only) because they actualise their laughing capacity differently, but (also) because they have different inherent capacities for laughing and having fun! The essential property is the same, but each participant has as much of it as it can. Or, as Proclus usually expresses it, it depends on the 'fitness' of the participant.

> If the product did not have a fitting potential (*kat' epitêdeiotêta dynamin*), how did it come into being? For an agent acts on everything that is capable of being affected, not on any chance thing whose nature may prevent it from being affected. (Proclus, *El. Th.*, prop. 79)

Variable capacity, the fitness to partake of a property, distinguishes things more radically. To suggest, as Porphyry did, that some people laugh more than others because they actualise more their equal capacity to laugh, is no more controversial than to observe that the same person laughs more at some times than at others. The same person's capacity for fun does not expand or contract. However, to say, as Proclus does, that different entities partake of the same property differently because they have different capacities, makes their distinction more fundamental. The 'more or less', which initially we met in the non-essential attributes and later in the essential properties, no longer applies just to the variable actualisation of property. It reaches to substance.

Variable capacity married to a series yields a scale. The property, which is shared in, differentiates a series of participants. Each participant species (in the same series) is distinguished from others by its mode or degree in capacity to have the property (of the series). Some have more of a capacity for it, others less. In this manner, the property stands as an archetype to a series of species.

This is what underpins the late Neo-Platonic hierarchy of being, knowledge and value, for which Proclus is famous. Clearly his notion of predication is more Platonic than that of Porphyry. By extending the 'more or less' over the 'univocal', he returns decidedly to the idea that things are defined as 'copies' of an 'archetype-model' (compare the prototypes and semantic fields in modern linguistic theory). He also stretches what species and genus are. A characteristic property differentiates a column-series (let us call them new-style species). But each series contains ranks of participant species (let us call them old-style species). This makes it hard to say that a given property discriminates a single, sharply-defined species (of the old style); this is a feature of semantic fields, too. We have arrived at the same conclusion as we did earlier when we argued through sameness–difference and similarity. For a given property, we no longer have just one species (of the old style) but a number of them. As a result, property now takes much of the character of a genus (of the old style).

The most striking application of this we shall see shortly in the theory that the cause is greater than the effect, later known as 'the Proclean canon'. Briefly, Proclus asserts, ostensibly against Iamblichus, that the higher and more general the cause is, the further its reach, and the greater the number of its effects. Another formulation of it is that the primary principles emanate their properties first, and are the last to withdraw them (see also Chapter 3, section 9, subsection on One and the inverse hierarchy). In the context of the present discussion, we can just discern how this is accounted. First, let us turn to Porphyry again. When he was pushed to justify how the genus can be logically prior to the species, he suggested that, for example, in the case of animals, even if all 'differences' (i.e. what defines and brings about species within a genus) are removed, then 'animate sensible substance, which is the animal, is conceivable/exists in thought'.[23] There are many interpretations of what Porphyry meant by this, including that a genus without species is the attribute in its bare form. Whatever is the case, in Proclus we do find attributes that are 'perfect' and ones that are 'traces' (cf. Chapter 3, section 2, Levels of being and knowledge; section 9 on the inverse hierarchy). The 'traces' are the last to withdraw from a subject: for instance, intelligence in animals. This is no intelligence in its properly specified form, viz., rationality, but bare intuitive cognition. As for the leap from existing in thought to existing really, Proclus is always keen enough to refer such important·truths to an independent reality.

Property as a genus and the prospect of a bare genus are typical examples of post-Aristotelian developments. For Proclus, they help to clarify what the participant is. It is not any odd subject, nor just a subject as such. We are not dealing with formal predication. The property already exists as a substantive. For participation to occur, there must be something fit and ready to admit the essential qualification due to property. A pure subject is unqualified for anything. What participation needs – and causation as the actual transmission of property – is a matrix suitably adapted for the specific differentiation. What is this suitably prepared ground? Nothing else except the property itself. This is definition by applying differences on a genus as matter, but with a Neo-Platonic twist which owes more to the Platonic division of a higher Form into lower species. The basic generic property is not a potential substrate-matter which depends on the 'differences' to inform it. It is a fundamental reality which is already active, and contains all possible specific forms of its activity. So the titular participant is something with the capacity to admit a specific definition, to become an instantiation. It does not become a participant until the property that can be shared becomes actually participated in.

> All those characters which in the leading causes have a more universal (*holikôteran*) and superior rank become in the resultant things, through the irradiations from them, a kind of substrate (*hypokeimena pôs*) for the transmissions of the more specific properties; and while the irradiations of the superior characters thus receive the processions from the inferior characters, the latter are founded upon the former. There is an order of precedence in participation: successive impressions (*emphaseis*) fall on the same substrate, the more universal activate first, and after their activities the more specific supply their own transmissions to the participants . . . it is evident that the

> irradiations of the superior cover the participant in advance, and put their strength to the transmissions of the subordinate characters; these use the superior irradiations as foundations (*hypobathrais*), and act on the participant, which was prepared by the superior. (Proclus, *El. Th.*, prop. 71)

By this train of argument, a specific property does not belong only to one single species, but to a series of them. Why? The property defines its class of participants. However, the participants are characterised by their property unequally. Some have it more, others less. Instead of level and univocal predication, we have a column of subordination. The property is common to its participants but in different degrees. Each different degree constitutes a different species standing analogically to others in the series. So a single property has a chain of species, each differentiated by its degree of similarity to the property as an archetype.

What about a family of coordinate species? It may be argued that species of the same (horizontal) rank have the property in a standard, uniform fashion.[24] To reuse a previous example, some people may laugh more or less than others, but, once they are laughing, one laugh is surely not substantially different from another. Proclus, however, insists that coordinate species are also in a chain of subordination. One laugh is not the same as another: some are more of a laugh than others; or, to use Proclus' own examples, some intellects and souls are more like their 'monad' than others. If that is not enough, Proclus makes the inequality of coordinate species ontological. Some are independent and self-substantiated. Others are derivatives and vestiges of their general property.

So, there are two chains of subordination.[25] The one consists of a property with its participants ranked under it, namely the chain of participation. For Proclus, this is a diminution (*hyphesis*), a subtraction, a slackening of the head property, as if its assets are gradually decreased down the scale of participants. Each rank of participant is of a different substance, and modifies or conditions the participated property 'in the manner appropriate to each'. So, for example, intellects have beauty in an intellectual manner, and bodies in a physical, corporeal manner. As we shall shortly see, this is the main direction of 'procession' (*proodos*).

The other chain of subordination consists of a property and its specific forms ranked along the chain. For Proclus, this is a coming down (*hypobasis*) to details, a decline to particulars. However, in this chain there is no alteration in substance, unlike what happens in the chain of participation. The property is not yet distributed to shareholders (participants), but is simply parcelled out in many particular shares. For example, the 'monadic'

Intellect becomes a multitude of particular intellects, Soul and souls. Consequently, saying that the property is reduced to 'instances' is wrong, because the 'instances' are, strictly speaking, the participants. Property and its particulars are broadly of the same rank and substance. Particulars are relatively subordinate to the 'monadic' property, because as particulars they are diminutions of it. What this chain sets to achieve is the first explicit multiplication: to render the 'monadic' property into a manifold (*plêthos*) that can be instantiated in participants. In this way, Proclus can say that the transcendent 'monad' produces without becoming involved with substances other than itself.

Notice that the head-property's relation to the chains shifts according to the two kinds of subordination. On the one hand, the property is common to its class (of participants, or of its family of particular forms). On the other, the property is the prototype head: the class members are differentiated and ranked by their degree of similarity to it. Where is the property? If present throughout the class, it cannot be the head part of a series. This is another way of expressing the paradoxical status of the Forms in the *Parmenides*. And Proclus' theory is framed around it.

We must remember that Proclus has at least two sorts of whole: one 'correlated' to parts, the 'whole of the parts'; one 'exempt' from them, the 'whole prior to the parts'. Accordingly, there are two sorts of general type.[26] The former is found 'correlated' with the participant members of its class, and is their common nature. It comes close to 'universal' in the conventional sense, but not completely because it applies to graded series, not univocally. The latter is the archetype. It gives the class its common nature, but itself is an undivided 'monad' which is 'exempt' from direct participation. So 'property' has two senses: that which characterises and distinguishes one series from any other; the principle, the cause or source of that which characterises the series. Put in terms of participation, the former can be shared in and distributed: it is 'participable' (*methekton*) (grammatically a verbal adjective). It becomes actually shared (*metechomenon*) when all the sufficient conditions are met. The other cannot be shared in: it is 'imparticipable' (*amethekton*) (another verbal adjective). Proclus' distinction between common nature and archetype is so fundamental to his thought that it extends to any entity, form or attribute. It does not just describe the relation between physical particulars and (Platonic) Forms, but extends to anything physical or non-physical. For example, in the next extract, Proclus speaks of both genus and species being shared and not shared in. We can think of whole–part and genus–species simply as something generic and something specific. The force of Proclus' argument is that a participable property, whether generic or specific, must derive its substance from an imparticipable source.

> All the multiple unities (*henades*) must derive their existence from the One, and from them the pluralities (*plêthê*) are derived, both the primary pluralities and those which succeed them, and always those which are further away from the One are more pluralised than those which precede them, but even so every plurality has a double unity, one that is correlated (*suntetagmenên*) and one that is exempt (*exêirêmenên*) . . . See how Beauty is twofold, a beauty before the many, and a beauty in the many . . . hence the sun, moon and each of the physical species has an aspect that is in others and one belonging to itself. For those that exist in others, i.e. the common terms and the participated in, must have prior to them that which exists in itself, in a word, the imparticipable. The exempt form exists in itself, being the cause of many things, unites (*henoun*) and binds together the plurality. And again, the common term is in the many, and is the bond of the many. This is why Human himself is one thing but in instances (*kathekasta*) is another . . . the former is an object of intellection, the latter of sense-perception. Therefore as each of the forms-species is twofold, so each of the wholes is twofold. For the species are parts of wholes, and the imparticipable whole is different from the participable. (Proclus, *In Parm.*, 707.5–31)

> Every imparticipable term arises in its capacity as imparticipable from no cause other than itself . . . If there be superior terms from which it is derived, it proceeds (*proeisin*) from them not in the capacity of being imparticipable but in the capacity of participant (*ouch hêi amethekton . . . all' hêi metechon*) . . . In its capacity as caused, it is a participant, not an imparticipable principle; in its capacity as imparticipable, it is a cause of participated things and is not itself a participant. (Proclus, *El. Th.*, prop. 99)

Each imparticipable cause, the '*monas*', the 'first' or 'prime' (*prôtos*), is the origin of the family of participated members which pertain distinctly to it: for example, Intellect and intellects, Soul and souls. The imparticipable also marks a substantive change in the procession. Soul is different from Intellect, yet is derived from it; the best soul is intellectual. Relative to its members, the imparticipable is an 'exempt' term, but relative to previous and higher substances it is a participant. The chain of being and knowledge is not cut off into bits. The participated are the ones which actually 'take part' in the chain of causation, like the 'intermediaries'. They constitute the 'multitude' of the said property. The 'participants' are the instances of each participated kind. They may refer to whole classes (for example, animal species that are four-legged) or to levels of being constituting a single entity (human intellect in human *psychê*). In the triadic scheme of causation, they correspond to the effects, which are caused by the power of the participated. Proposition 24 of Proclus' *Elements of Theology* summarises well this triad and links it with the basic triad of one, one-and-not-one, not-one.

> All that participates (*metechon*) is inferior to the participated (*metechomenou*) and the latter to the imparticipable. For the participant is incomplete before the participation and has been made complete (*teleion*) by participation, and therefore it is in all ways subordinate to the participated . . . Again, the participated, being due to someone else, is allotted a lower mode of existence; for the latter is more akin (*syggenesteron*) to the cause of all [viz. the One], while the former is less (*hêtton*). The imparticipable, then, precedes (*hêgeitai*) the participated, and these the participants. For, to summarise, the first is one prior to the many (*hen pro tôn pollôn*); the participated is within the many (*en tois pollois*) and is one-and-not-one; while every participant is not-one (*ouch hen*) yet is one [i.e. is still limited by unity; see prop. 1].

In Proclus' works, the imparticipable causes and their substructure are reviewed in the *Platonic Theology*. The participated, for example, unities-henads, Forms, intellects, souls, etc., are examined mainly in the *Elements of Theology* and the *Commentary on the Parmenides*.

To summarise, the basic structure of participation can be laid out in a threesome: imparticipable – participable – participant. The imparticipable is the archetype of the series. The participable is the type distributed and instantiated in the participant series. The participants are the species that have the type in different modes and degrees. Nonetheless, this triadic scheme, like many others in Proclus' system, becomes a multiplex immediately we take into consideration the point that the participable is itself a series. Specifically, the basic structure becomes a foursome when we take into account Proclus' distinction into independent and dependent participables.

Self-sufficiency

Some participated members are most like their imparticipable origin. They are the 'self-constituted' or 'self-substantiated' (*authypostatos*), 'self-complete' (*autotelês*), 'self-sufficient' or 'independent' (*autarkês*).

They can exist by themselves, being 'separable' (*chôriston*) from their participants.[27]

The participated properties that are mere 'irradiations' are least like the imparticipable archetype. Other technical names for them are: 'images' or reflections (*eidôla*), 'copy-images' (*eikones*), 'appearances' (*indalmata*), and, perhaps, 'symbols' and 'signs' (*synthêmata*). Remember, however, that in a (Neo-)Platonic system everything is in some fashion an 'image' of another, so these terms are in practice loose. Proclus clarifies that the dependent participables are 'inseparable' (*achôristos*) from their participants, and are 'in need' (*deontai*) of them for substantiation. They are the 'particulated', divided and 'incomplete' or imperfect (*ateleis*) aspect of the relevant property. So, for example, even plants have a kind of life, by partaking of a mere 'appearance' of Life, and the irrational animals have an echo of Intellect.[28]

Proclus introduces innocuously properties that are participated in 'separably' (*chôristôs metechomenon*). If the archetype is exempt from participation, by the law of similarity some participables are also exempt from participants. In Platonism, souls are such entities. Souls (or personal minds) dwell in bodies but not permanently and inseparably (contrary to what Aristotle said about soul–body). Souls have their own substantive existence and are the source of personal identity. Proclus does call souls independent and separable participables. However, he extends 'separable' participation to all levels of existence, from the physical (the heavenly bodies) to the divine.

The 'self-constituted' are the metaphysical linchpins of Proclus' system. They are the perfected, proper aspects of the corresponding properties: for example, 'ideas' in the Intellect, 'rational' in Soul, and, in the case of the One, the 'divine henads'. They are properties which exist as independent entities, yet they can be immanent in participation and within the grasp of one's ordinary knowledge. They are 'correlated' with particular participants, yet they act act as model-paradigms which make 'similarity' possible, precisely because they are not transcendent. They are generated but not like physical things. The notion of 'self-generation' is complex and has both a philosophical and a religious pedigree in Late Antiquity. Separable participation is not an oddity thrown off by the systematic application of the theory of mean terms and similarity. Nor is it a minor artifice created for the sake of explaining Platonic souls. It is part of a web of concepts central to Proclus' (extreme) realist philosophy: independent existence, self-sufficiency, self-substantiation and self-perfection.

Briefly, 'self-sufficient' (*autarkês*) are things, attributes or values that contain their ultimate states. Good or excellence (in Greek, the word *agathon* has both meanings) is desired the most, because it is an ultimate state that lacks nothing else. 'Independents' have their goals in themselves and meet their ultimate state without external agents. 'Self-perfect(ed)' (*autoteles*) are those complete in themselves. Proclus uses them synonymously with the 'self-sufficient'.

However, the more intriguing term is a narrower form of self-sufficiency, the 'self-hypostasised' (*authypostaton*). The Greek encompasses several fascinating meanings. Proclus devotes a cluster of twelve propositions of his *Elements of Theology* to it, and it is found dispersed liberally in all his works and in those of later Neo-Platonists. To encapsulate, 'self-hypostasised' are those that can supply their own substance, are capable of maintaining self-identity ('self-reversion'), possess their 'own foundation and place'. Of these I like the last best, because it brings out the role of *hypostasis* in Neo-Platonic ontology and epistemology. It means both substance *and* foundation: what constitutes reality and justifies true knowledge. Thus I should like to experiment with the translations 'substantiation' and 'self-substantiated' for *hypostasis* and *authypostaton*, respectively.[29] The medieval translation 'subsistence' has now lost touch with its referent, and it is wholly inappropriate to the Neo-Platonic conception of it as maximal (not minimal or notional) existence; it also lacks the transitive element. Besides, the foundationalist reading fits with Proclus' frequent references to things being 'rooted'. I suggest that this makes better sense of Proclus' clarification that the self-x's are not the x-substances in themselves. Something supplies attributes and properties, including sufficiency, perfection and substantiation, to something else. In the 'self' cases, we dispense with external agents but still deal with a transitive activity. The same thing supplies itself with the attribute. So, the self-x thing is truly a complex. It consists (logically) of a giver, a receiver and a gift, all bound in one (which accounts for the application of *hypostasis* to compound entities, as some authors have noted[30]). Proclus emphatically declares that self-sufficiency is 'secondary'. This is because it is not 'sufficiency' in its own right, as a substantive, but as a gift-attribute, that is, the 'sufficient'. For Proclus, this means that the gift-attribute has *not originated* in the giver, but has been handed down to the giver by an antecedent, superior principle. Thus Proclus posits the 'self-sufficient' below the 'good'. The 'good', or 'excellence' itself, is the origin and source of the property of completeness, which makes the self-sufficient an independent thing, after it is imparted to it.

One useful lesson from this terse distinction-making is that there is more than one sense of being separable. The transcendence of the archetype does not exhaust what it means to be independent and separable. After all, according to realist accounts, objective properties affect individual observers, but are not dependent on them for their existence or substance.

With Proclus' distinctions in mind, let us press realism further with a simple physical example, which illustrates the problem of unobservables. Cosmic bodies (stars, planets etc.) may be far or close, but as long we receive some light from them we can perceive them. Yet, they exist by their own means, separably of their observers. What is the underlying cause of these great agglomerations of matter? It is gravity, the property of mass-matter. Yet, gravity itself as a natural force or field is beyond any direct evidence. It can only be detected through cosmic bodies, matter particles. So, cosmic bodies and gravity are real independently of us, but in two different senses. What does depend on us, the observers, is not this or that cosmic body or the existence of gravity. It is what we, the perceivers, think these are, by framing concepts, hypotheses or speculations. Translating this example in Proclus' language of participation, we may say that cosmic bodies are participable but independent. Gravity is imparticipable and transcendent. Particular observations and instrumental detections are participant instances of the participables. In the language of wholes–parts, cosmic bodies would be wholes of parts, gravity the whole prior to the parts, and human construals wholes after the parts.

All this suggests a scale of reality and knowledge. As I read it, this is why separable participation and self-sufficient entities are so central to Proclus' system.[31] Without them, he would finish with two disjunct worlds: the transcendent and the private. Philosophy would collapse into mysticism and solipsism, and science would be banished. With them, he has one universe where reality comes in degrees, intelligibility and certainty are possible, and the greater and objective sustain the subjective.

Paths of participation

Finally, concerning adjacent levels, Proclus distinguishes two separate but equivalent paths of participation. They also show how the levels of existence, and the individual members within them, relate. Schematically, we can show the two equivalent paths of 'participation' and 'return' as follows (*El. Th.*, prop. 108):[32]

1. $A - a_B - B - b$
2. $A - a_B - a_b - b$

A is the imparticipable cause, and a the participated member of the higher order. B is the imparticipable cause, and b a member of the lower order and the end-participant of this sequence. The subscripts to the terms of the higher series identify their participant in the lower.

The twofold path emphasises that each thing retains its distinct identity while being a member of a whole family of entities/properties. For example, human beings behave both according to the prompting of their own souls, say *b* in the scheme, and according to those of Soul as a whole, *B*. The soul itself follows, or at least aims to follow, the contemplations of its intellect, *a*, which, in turn, is part of the cosmic Intellect, *A*.

The above scheme shows also how the levels of existence relate to the one-whole. The imparticipable cause of the higher order, *B*, is closer to the One, and is therefore more powerful and universal than the member(s) of its family, *a*, which are arranged hierarchically. They, in turn, are more so than the corresponding members of the lower, *b*, which are more particular.

7. CAUSATION

In Proclus, we encounter references to causes everywhere; more than we would normally expect. A cause (*aition*, *aitia*) is said to be something which is the producer (*paragon*) and an agent (*poioun*) and has the capability and power (*dynamis*) to bring about an effect (*aitiaton*), a product (*paragomenon*) or a result (*ginomenon*).[33] This is familiar territory.[34] However, Proclus frequently finds causes in most strange contexts. Proclus says that causes are 'greater than' the effects and 'contain the principles' of things, while some causes are 'more whole' than others. If this is not enough, he finds causes among abstract things such as time, souls, intellects, being and unity.

Clearly, such views about causes have little to do with statistical correlations of different physical events (the way in which scientific causality has been regarded since Hume in the seventeenth century). Proclus would have recoiled from the very premise that permanent definitions are grounded in uncertain relations between transient phenomena, where the human observer is the arbiter of what does or does not merit being called causal. Knowledge must have its foundations in well-defined, unchanging, universal laws. Proclus already had two such models: logical inference and classification.

With inference, we assert something by taking it from something else. We can extend this to causal relations. When we say that this is an effect of a certain cause, are we not asserting something (this is the effect of) by taking it from something else (the cause)? We have somehow inferred the effect from the cause.

The leading model of the power of logical inference was Aristotle's family of categorical syllogisms. Connected propositions comprise the premises which generate another proposition, the conclusion. Premises can be seen as the causes of the conclusion (e.g. Aristotle, *An. Post.*, 2.11:94a–95a). The advantage of conceiving causality as a chain of valid logical relations is that it enjoys the clarity and certainty lacking in links between physical events. We can make similar argument for mathematics (of which Proclus was very fond). Logical and mathematical relations reside in the eternal now, and hold in all cases. Syllogistic conclusions and mathematical proofs are always valid, unlike those based on physical events that might hold at a time but not in others, or for one situation but not for others.

Causality modelled on logical relations has the attraction that the resultant proposition is not something exotic but is composed from elements from the premises. For example, that Socrates is mortal derives from: all humans are *mortal*, and *Socrates* is a human. Putting it in causal language, diverse entities such as Socrates, Phoebe and Philip will all expire because they have a common cause: their humanity! Of course this sounds like vacuous truth – but so do analytic statements. It does not add anything external: something about what might be their cause of death, which has a distinct identity and existence, for example cancer or a virus. As Hume went on to point out, reason cannot reveal causal relations because it only considers logical relations. An effect logically implied in its cause does not constitute a different thing but is the same as the cause. Moreover, causal relations are not as logically necessary as they pretend to be. We can conceive of an event preceded by many others, and each alternative we think could logically happen. Proclus seems aware of these predicaments. In Chapter 5, on the challenge of the stars, we shall meet the second of the two problems, when he points to fictionalist syllogism in his rejection of the conclusions of the greatest Greek astronomer, Ptolemy. Nevertheless, as a criticism of his own position, he would deny it by appealing to realism.

That cause and effect are one kind, for Proclus, is not a disadvantage of the theory but a positive advantage. How can an effect be the effect of a certain cause, unless it is characterised somehow in the same way as its cause? The effects exemplify the cause's character, and to be an effect is nothing more than to instantiate the cause's property. For example, 'fire burns' can be expressed as: fire ignites inflammable things, these things are inflammable, so fire burns them. It does so precisely because cause and effect are of the same fire-class. A blazing log fire affects directly those things that are inflammable, such as matches, paraffin, petrol, dry wood etc. They ignite and maintain combustion, and themselves are fire. However, does not fire also affect things that are not inflammable, such as metal, ice, water? They do not ignite; they melt, boil, evaporate. Fire affects them, too, but in a different capacity – as a general source of heat. Fire also affects things that neither ignite nor become hot, such as luminescent watches, day-glow paints etc. Again, fire affects them in another capacity – as a source of light. By this line of argument, what is commonly called fire is numerically one but diverse agents producing different types of events. Each causal type of event, for example igniting, melting, illuminating, happens because what is affected has a predisposition to ignite, melt or illuminate. This much, however, is already offered by Aristotle's theory of change (esp. in *Physics* 8.4), which involves the actualisation of the potential of a thing to change in the specific way that it does. What Proclus supplies over and above Aristotelian change is that causation covers all domains, physical and non-physical, and the cause is metaphysically anterior and superior to the effect.

Proclus follows Aristotle (and Plato) on looking at causes as answers to the question: how do things come to be? Why are they the way they are? Causes are the requirements for a thing coming to be in the way it is. Further, if things are bundles of properties, the search for causes leads to questions of the sort: what are the characteristics of things? Where do they come from? Since we know and distinguish things by their characteristic properties, asking about their causes involves asking about the origins of their characters. In this manner, his theory is no longer limited to the physical, but extends to all entities. Anything that has some kind of existence or property has a cause. This is why Proclus' account is so full of them.

> If all things were uncaused, there would be no sequence of primary and secondary, completing and completed, regulative and regulated, generative and generated, active and passive; and there would be no knowledge of any thing. For the task of scientific knowledge is the recognition of causes, and only when we recognise the causes of things do we say that we know them. (Proclus, *El. Th.*, prop. 11)

Six causes

Looking at causes as the requirements of things prompts the question: are they all the same or are there different sorts? What, for example, does it take to bring about a piece of furniture? Proclus had at his disposal at least two approaches. Plato in the *Timaeus* suggested that the world came into being by an active cause: its Maker. Like an ordinary craftsman, the Maker does not himself generate the things that he makes but fashions them into shape using existing stuffs. Moreover, like a good constructor, he does not build impromptu but according to a model-plan, a *paradigm*. Aristotle, on the other hand, was more precise on what 'cause' and 'why' mean. He discriminated four different senses: the material out of which a thing is generated (matter: in Greek *hylê*, derived from the word for wood); its essential definition (the form of its matter: post-Aristotle, called the 'enmattered form'); the agent (the efficient cause); and the purpose for which it comes to be (final cause). To the late Greek philosopher, the two schemes were not incompatible as long as each kept to its appropriate scope. Actually, Plato's receptacle of creation is space, not matter; for Aristotle, the paradigm is synonymous with form; neither has an instrumental cause. The Neo-Platonic theory is found fully developed in Proclus and in the students of his students, such as Olympiodorus (Head of the School at Alexandria), John Philoponus (also at Alexandria) and Simplicius (later at Athens). In total, he has six types of requirements for a thing coming to be: the perfective or final (*telikon*); the paradigmatic (*paradeigmatikon*); the creative or efficient cause (*poiêtikon*); the instrumental (*organikon*); the formal or specifying (*eidêtikon*); and the material (*hylikon*).

> Just as the Creator is secondary to the One, being of a mixed nature, so becoming (*genêton*) is mixed. Because these are the causes of the cosmos, the final, the paradigmatic, the efficient, the instrumental, the formal, the material. The final cause [Plato] himself will later [*Tim.* 46f.] prove to be apparent from the account and demonstrations. As for the instrumental, the material and the formal, he hands them down from the axioms that were mentioned earlier. For if the universe is not a being but a becoming, there is a form which is participated in by matter, and immediately next to these two is a moving cause (*kinêtikên*). As for the creative, he declares it in what he just said. For if the universe is generated, there is a cause that created it. The paradigmatic he will shortly mention. For if the cosmos is beautiful (*kalon*), it is created after an everlasting model. (Proclus, *In Tim.*, 1.263.20–30)

What do these mean in practice? Olympiodorus gives the clearest account of the Neo-Platonic six causes. In this extract, he furnishes us not only with a down-to-earth example but also with an insight into its application in Neo-Platonic political theory.

> Therefore since we recalled to mind the first principles of things and

> the political constitution, we come to talk about the universal principles and about political well-being and about what are the principles of political science. The first principles (*archai*) of every thing (*pantos pragmatos*) are six: matter, form, efficient cause, paradigm, instrument, end-purpose. In the case of a carpenter [*tektonos*: metaphorically the craftsman], matter is the wood. Form is the board or something like it. The efficient cause is the carpenter himself. The paradigm is that in relation to which the carpenter created, led off by imagination (*pros ho tên phantasian apagagôn epoiêsen*). The instrument is the saw or carpenter's axe that happens to be (*tychon*). The end-purpose is that because of which (*di' ho*) he has created. Even so, *hoi polloi* and the orators who do not look to the truth say that the subject-matter of political science is the animate body, the form is luxury, the efficient cause is the rhetoric, the paradigm is tyranny. In this way, they say, tyrants control everybody, and so in this manner things must here be governed, with the instrument of persuasion, and pleasure as the end. But we say, the matter is the soul . . . the form is justice and temperance, the creative cause the philosophical life, and paradigm the orderly cosmos . . . The instruments are moral habits and education. And the end-purpose is the good. (Olympiodorus, *In Gorgiam*, 5.1–31)

Observe that the six relate to something generated, which is thus conceived as a compound. Then note that in the previous extract all six are 'causes' but in the second they are 'principles'. Only the creative, efficient, is explicitly a cause in both (a differentiation that is earlier found in Iamblichus (apud Simplicius, *In Categ.* 327.6–14). These subtle variations in terminology reveal the different senses of what is a cause.

As the second text shows, of all the prerequisites only the creator is overtly acting to bring about an effect (hence the Latin term 'efficient'). In the creation of a piece of furniture, only the carpenter directly does something. The wood, saw or axe, the model and the purpose do not. Earlier, Iamblichus had drawn attention to this and stated bravely that only the creative has the right to be especially called 'cause', and bluntly dismissed the paradigm and the final causes for not being proximate to the effect. Nevertheless, all six are principles insofar as they are fundamental and analytical elements. Together they exhaust the senses in which a thing comes to be. As Proclus clarifies it, the term 'principle' means 'cause' when we take it broadly and inclusively.

> For the name of 'principle' (*onoma tês archês*) includes (*perieilêphe*)

> and the contributory causes (*synaitia*), but the title 'most sovereign' [*kyriôtaton*: most strictly] is added to indicate the real cause (*ontôs aitian*). For the more sovereign principles are the causes of generated things, but the contributory causes are in the service of others and are resident in their results. (Proclus, *In Tim.*, 1.369.5–9)

Proclus draws an important distinction between the true causes and the contributory or accessory ones (the latter are employed in Plato, *Tim.* 46, *Polit.* 281, *Gorg.* 519b1–2, and in Aristotle, *Metaph.* 5.5: 1015a21;b3 as 'conditions', but were developed by the Stoics). The accessories may be necessary, in that they lead to the effect, but are not sufficient. That which leads somewhere does not have to be its cause, just as the road to the theatre is not the cause of the play.[35] Sufficiency lies in autonomy.[36] The material, the specific form and the instruments are not autonomous. In this sense they are incidental, but proximately linked to the resultant thing. The accessories are necessary to the result coming to be, but are contingent on its particular make-up. They are logical parts of the product, not units in their own right.

On the other hand, the creator is clearly autonomous, and what he does is logically necessary. The carpenter can do nothing else but carpentry. The paradigm and the end are also autonomous (and efficacious; see the sections on the intelligible being, and the One, respectively). The paradigm is the fixed Form which the creator has before producing articles of specific forms. The final end, for the sake of which the creator produces, is the 'most sovereign' unit of all. The necessity of the true causes follows from their essential nature and is fixed before the production of the effect.

> Every cause that is strictly (*kyriôs aition*) so called, transcends its resultant. For if such a cause were immanent in its effect, either it would be a complementary part of the latter or it would in some way need it for its own existence, and it would in this regard be more incomplete than the effect. But that which exists in the resultant is not so much a cause as a contributory (*synaition*), being either a part of the thing produced or an instrument of the maker. For that which is part in the thing generated, is less complete than the whole; and the instrument serves the maker for the process of production, but is unable to determine for itself the measure of creation. Accordingly, every cause strictly so called, inasmuch as it both is more complete than that which proceeds from it and itself furnishes the measure of its production, transcends the instruments, the elements, and in general all those described as contributory causes. (Proclus, *El. Th.*, prop. 75)

The cause is prior to and greater than the effect

Another difficulty (as Hume and others later observed) with having effects implied in their causes is that logical implication does not distinguish precedence. While this makes it possible to attain knowledge of causes by extrapolating them from the effects, it creates the absurd prospect that things can simultaneously be causes and effects of each other. Temporal priority, that the cause comes at a time before the effect, is no help. In Proclus' general metaphysical system, time itself is but a member-entity, not a reference frame. Time as a whole does not come into existence until we come to consider how things become particular and physical. Causality, on the other hand, functions even within the eternal now.

> All that exists proceeds from a single first cause. For otherwise all things are uncaused; or else the sum of existence is limited, and there is a circuit of causation within the sum; or else there will be regress to infinity, cause lying behind cause, so that the positing of prior causes will never cease. But if all things were uncaused, there would be no sequence of primary and secondary, perfecting and perfected, regulative and regulated, generative and generated, active and passive; and all things would be unknowable. For the task of science is the recognition of causes, and only when we recognise the causes of things do we say that we know them.
>
> And if causes transmit themselves in a circuit, the same things will be at once prior and consequent; that is, since every productive cause is superior to its product (prop. 7), each will be at once more efficient than the rest and less efficient . . . It remains that there is a first cause of all existing things, whence they severally proceed as branches from a root, some near to it and others more remote. For that there is not more than one such first Principle has already been established (prop. 5), inasmuch as the substantiation of any manifold is posterior to the One. (Proclus, *El. Th.*, prop. 11)

Here, Proclus speaks again of an order of superiority that renders the cause antecedent to the effect. It is an order in logical and metaphysical terms. It is that of wholes–parts (see Chapter 2, section 5, Parts and wholes). The effects are the members of a class delineated by features furnished by the cause. Causes are predicates of classes. This is how we can say that the effect is implied in its cause, and we can extrapolate general causes from many particular effects. They are all of the same type. The cause is antecedent not because it exists at some time before, but because it is that which determines the class. Additionally, the cause not only comes before its consequents, but also surpasses them. It is superior in the sense that it informs the effects and makes them what they are. For example, matches exist precisely because they are fire-making things, yet fire is found apart from matches, in coal fires, gas-lighters, the sun, and in many other things. Matches must be fiery, but fire need not be in a match to exist.

> If one were to wonder how causes are everywhere present to their effects, he will be able to observe in logic a perfect image of this. For genera are always predicated of those things of which their species are predicated, the species along with the genera, but the genera even without the species. (Proclus, *In Parm.*, 926.33–8)

The cause has precedence in two senses: as that which comes first in a sequence, and as that which heads the consequents. First, the cause is antecedent to the effect. Causal relations, products, and in general anything there is, presuppose some cause which has brought them about. Cause and effect are connected but not symmetrically. The product depends entirely on its producer, but the producer does not express itself completely in the product. The consequent cannot infer the antecedent completely, but what is affirmed of the particular can be of the whole. So the elder is the leader.

Why should Proclus wish to put the elder (the cause) in a position of leadership over the group (the effects)? Are human conventions influencing him? In traditional societies, people with long ancestry or of advanced age become leaders because they have knowledge of or embody the customs and traditions that make their society distinct (interestingly, the Latin term ‘prior’ has the meanings of ‘ancestor’ and ‘excellent’, and was used in the late Roman empire as a title for officials and magistrates). As Proclus explains, among Greeks a mature man until the age of 70 is a *presbyter*, elder. ‘Where is the character of being an elder and grey-haired so conspicuous as in the gods, or so much praised by the theologians as in the ancestral deities?’[37] Still, leaders need not be elders; they can be elected. In the context of predication and causation, do we not glean the class predicate *after* we have gathered all the members and looked for suitable characters? Likewise the cause need not be superior to the effect but, as Hume would put it, a confident expectation based on habit. So we are back to the beginning of this discussion.

To see why Proclus finds it fruitful to regard causes as superior to the effects, we have to bear in mind how he links production (how things come to be) with predication (how things acquire properties). Causation is the transmission of property from the cause to the effect.

> This we mean by cause, that which fills all things which by nature partake of it, and is the principle (*archikon*) of all things secondary to it, and is present (*paron*) in all the productive processions of its irradiations. But by its essence, which is unmingled with things located in place, and by its transcendent purity, it is nowhere . . . In order that as cause it may be present in all that are capable to participate in it, while it is itself separable from and prior to all which are filled by it, it is simultaneously everywhere (*pantachou*) and nowhere (*oudamou*). (Proclus, *El. Th.*, prop. 98)

> Everything which by its existence supplies a character to others is itself primally that character which it communicates to the recipients. For if it bestows by mere existence, and so makes the communication from its own essence, then what it bestows is inferior to its own essence, and what it is, it is more greatly and more perfectly, if indeed whatever substantiates something is superior to the nature of its product. Thus the character as it pre-exists in the original giver has a higher reality than the character bestowed: it is what the bestowed character is, but is not identical with it, since it exists primally and the other only by derivation. For it must be that either the two are identical and have one definition; or there is nothing common or identical in both; or the one exists primally and the other by derivation. But if they had the same definition, the one could not be, as we have assumed, cause and the other resultant; the one could not be in itself and the other in the participant; the one could not be the author and the other the subject of a process. And if they had nothing identical, the second, having nothing in common with the essence of the first, could not arise from its essence. It remains, then, that where one thing receives from another that which is the essence of that other, the giver possesses primally the character which it gives, while the recipient is by derivation what the giver is. (Proclus, *El. Th.*, prop. 18)

Before we get lost in the forest of Neo-Platonic jargon, what Proclus is describing here is the problematical existence of universals. The universal is what gives a thing a character. Greenness, as a universal, is present simultaneously in all its concrete instantiations, for example green leaves, green woollen jumpers, green doors, but does not belong to any one of them. So a universal is both nowhere and everywhere. For Proclus, the cause functions as a universal, while the effects are the instantiations, the participants. This, coupled to Platonic realist metaphysics, is why the cause is in essence *like* the effect, but is *different* in substance (not as Sorabji suggests in *TCC*, pp. 315–16).

Acquiring a property implies that a thing receives it from something else, which has it. In Proclus' metaphysics, this amounts to the same as coming-to-be. Species are what they are because of their characteristic property and their differences from others. Causal events exemplify the cause's characteristic property. The resultant thing, the effect, has originated in the cause (or causes). The effect has the character of its source, and is a particular species of it. But in separating from its cause, it becomes something else, that is, it comes into its own being. Thus we can no longer say that the effect has the same character exactly as before (for it would still be in the producer, not in its own existence). Nor can we say that it no longer has the causal character at all. As we saw earlier (see Chapter 2 section 3, on similarity and sympathy), an entity does not have to be either identically the same as another or altogether different. It can be similar. The character of its originating cause is still present, but in an alien condition and mode. The causal character is modified by the new condition in which it is found. Its purity becomes 'diluted', and is no longer fully the same as it was within the cause. It is similar to a greater or lesser degree. Causation involves the transmission of the causal character and simultaneously its alteration (thus marrying Plato's causal Forms with Aristotle's theory of change and becoming, but extended to the metaphysical).

From the perspective of the originating cause, the production and 'procession' of the effect results in a lessening of its character. The further away (metaphysically speaking) from the cause, the less the effect is like its origin. As Proclus graphically puts it, employing strong physical images:

> the primal powers are unlimited because of their indivisibility; for the distribution into parts dissipates (*diaphorei*) and dissolves (*eklyei*) the power of every thing, but indivisibility, compressing (*sphiggousa*) and contracting (*syspeirôsa*) it, keeps it in itself intact, without interruption or diminution. (Proclus, *El. Th.*, prop. 86)

The less it is like its origin, the more the effect exhibits qualities that are alien. But, and this is crucial to Proclus' entire philosophy, the effect never loses touch with its original cause(s). If it lost them, it would lose its definition.

From the perspective of the effect, its production and separation from the cause is the coming into its own. The effect is no longer in the cause. It is a new being, distinct from its origin(s). Distinguished from the parental cause(s) and ontological siblings, it now constitutes its own form and species. The property that predominates in the effect's bundle determines its especial character. And so the chain of causation continues. Both primary and secondary causes continue to contribute. So the earlier in the chain, the simpler the product is, the further the more complex, being the product of a cascade of principles.

Proclus foresees one important consequence of this chain of causation. Not all causes reach the furthest effects. As Olympiodorus later accredits him, the 'Proclean canon' (incidentally, Olympiodorus, and Elias, *In Categ.* 107.25, are sources for the adjectival form of Proclus' name) is that 'the higher [causes] do not stop together nor lead together to the lower, but they proceed to greater processions, as in the manner of three archers [allusion to Plato, *Laws* 705e5?] unequal in power, the stronger ones will let the arrow go further' (Olympiodorus, *In Alc.*, 109.17–21).

The cause which is more primary is the more fundamental. The more primary is also the older (in a non-temporal, metaphysical sense). The older, more primitive and fundamental the cause is, the more general it is, because it has the greater number of chains of effects after it. The greater the number of effects, the stronger and more extensive is its power. On the other hand, the later or 'younger' the cause is, the more secondary, less fundamental and less powerful it is. But it is more specific.[38]

Ironically, the Proclean canon, for all its impressive rationalistic formulation, cannot help displaying an empirical quality. If the number of effects counts the causal strength, then the cause is judged a posteriori, after we have taken count of the effects. For example, when Proclus assigns concrete properties to the levels of causes (see Chapter 3 on levels of existence), he makes life antecedent and more fundamental to intellect because there are living beings (plants) without intellect. Surely this is an empirical fact, not something that ought to hold necessarily for all possible worlds. Presumably one answer would be that for most Greek philosophers, including Proclus, this is the best and only world; more strongly, such causes operate principally in the eternal now, and so, like God's providence, anticipate their effects.

Primary and secondary causes play a further role in the generation of things. Being general because fundamental, the first causes supply the substratum, which the more specific causes qualify more specifically. Of course, this goes back to the theme of wholes–parts and of participation: the general cause is the genus of which the particular is a differentiated species.[39] This is how a new thing is generated.

> All those characters which, in the participants, have the relative position of substrates, proceed from more complete and more universal causes . . . The principles which substantiate the prerequisite substrates for other gifts are causes of more effects, since they substantiate even the suitable receptivity prior to the presence of the forms-species. (Proclus, *El. Th.*, prop. 72; see also 71)

> Every craftsman either himself gives substance to the matter on which he acts, or makes (*poiei*) the existent matter well adapted (to his action). And if he makes the existent matter well adapted (*euergon*), he makes matter in this respect; for the well-adapted indicates the matter [of his action], but not simply a substrate; for while it is not well adapted, it does not have the power of matter [i.e. is not 'suitable' to the specified action]. Therefore, whether he gives substance to the appropriate matter, or he takes the matter, which exists as a substrate, and makes it well adapted [to his action], he himself makes entirely the matter suited to his activity. (Proclus, *On the Eternity of the World* argument 14, in Philoponus, *Contra Proclum*, 538.2–10)

To make clearer what Proclus is driving at, we may look at two modern analogies. In sexual propagation, every living being is determined by a bundle of genes. One's genes come from one's parents, theirs from their parents, and so on, backwards in evolution. So the features of the earliest biological ancestors are present, however dimly, in all the progeny. Still, children are more like their immediate parents and closest relatives (analogy fails with genetic mutation). Extending it to the physical universe, biological matter consists of complex molecules of carbon, oxygen and hydrogen atoms. Carbon and oxygen are star-dust produced by nuclear fusion, whose fuel is basically hydrogen. Hydrogen is the most primitive atom there is, composed of two fundamental particles, electron and proton. They, in turn, came into being when the energy at the birth of the universe coalesced into matter (of hadrons and leptons). So the earliest and oldest forms of matter, bound in relatively simple bonds, are present throughout the universe and underlie the later and younger ones, that is, molecules and crystalline and metallic bonds. The latter, however, determine how things are to our immediate perception, such as animals, buildings, hills, trees and sky (analogy fails when considering that primitive and recent states of matter can coexist at broadly the same phenomenal level but at different regions of space).

The theory that principles are arranged in consecutive levels is found throughout Proclus' metaphysics and vocabulary. He exploits or invents all sorts of comparatives and superlatives (relative to the 'principle' of a character), because everything in his system stands in relation to something before or after. This is really the reason for his famous triadic arrangements. Indeed, the one which he uses very frequently, and which seems to be original to him, is a formalisation of it. Everything exists either in a causal mode, in its own existence, or in participation.

> All that is substantiated in any way it does either in a causal mode (*kat' aitian*), like a principle (*archoeidôs*); or belongs in its own institution (*kath' hyparxin*), or in participation (*kata methexin*) like an image (*eikonikôs*). For either we see the product in the producer, as pre-existent in its cause . . . or we see the producer in the product . . . or else we contemplate each thing in its own rank, neither in its cause nor in its resultant. (Proclus, *El. Th.*, prop. 65)

The order of priority is interchangeably an order of superiority. This follows from the argument of the transcendence of the undivided whole to the sum of parts (see section 5 above, Parts and wholes). Wholeness here carries a sense of value and perfection. What comes first encompasses all possible subsequent 'unveilings' of it, which divide it up into more specific forms, which thereby 'dilute' its character. So, the primary, more general and more 'whole' principle embodies, as it were, the character in its full, undivided self. The secondaries, which come after it, are therefore inferiors. In fact, in the Greek language 'secondary' and 'inferior' are the same word. The original principle contains the property complete, that is perfectly, but the subsequent, incomplete, namely imperfectly. Again, 'complete' and 'perfect' are the same word in Greek. So, for Proclus, equating superiority with perfection is practically an analytic statement.

'Perfection' thus formulated extends beyond metaphysics into values, epistemology and science. The good is the possession of pure wholeness, which keeps one integral and untroubled. Love is the desire to achieve this state of wholeness. The exercise of reason is superior to gathering incidental facts empirically. Intuitive or direct apprehension of reality is superior to discursive reasoning about it. Fundamental cosmic bodies have invariable and simple properties, but bodies in ordinary experience are transient and complex.

One cause, plural effects

Causation has also a role to play in the unity–diversity problem. That the breathtaking variety of our natural world is due to simpler causes, and ultimately to one principal cause, is the rule of parsimony. It has a very long history, for it is one of the first steps to philosophy and science. Long before we arrive at the notion that there is one cause of everything, we have to establish that there are 'causes' and 'effects', that there are certain simple substances common to all natural things, that is, the notion of composite entities, and that the changeable bodies and events of the natural world are due to more durable and permanent principles. The ancient Greeks denoted the ultimate principle and basic substance of things by the word '*archê*', meaning origin, source of power and authority.

Neo-Platonists received the doctrine of the One partly through the Platonic exegetical tradition, and partly through Pythagorising Platonists of the first and second centuries AD, such as Moderatus, Nicomachus and Numenius. Plotinus made it central to metaphysics, and re-established the Platonic notions of existence by 'imitation' and 'analogy' (to the One).

The 'one' (*to hen*) is necessarily prior to all pluralities and manifolds (*plêthos*), and is the principle and cause of them (e.g., Proclus, *El. Th.*, props 5 and 11). Manifolds are not true pluralities: that is, composed of an unlimited or infinite number of members, which can also be pluralities. This would lead to multiplication regressing to infinity (*eis apeiron*), which, as Aristotle has established, is unacceptable on both ontological and epistemological grounds.[40] As we have seen, Proclus accepts plurality (the first statement of the *Elements of Theology*), but: 'Every plurality partakes in some way of unity'. If the One and plurality have nothing in common, there can be no causal link from the one type of existence to the other.

> For since the producer (*paragon*) is necessarily superior to the product (*paragomenon*), they can never be identical without qualification, or equal in power. And if they are not identical and equal, but different and unequal, they are either entirely distinct from each other or at once united and distinguished (*hênotai kai diakekritai*). But if they are altogether distinct they could not relate (*asymbata*) and there will be no sympathy between effect and cause. (Proclus, *El. Th.*, prop. 28)

What bridges the ontological gap, and makes causation possible, is power or potency. It extends from the cause's substance and generates the effect. So, there is the triadic arrangement: cause/producer – power – effect/product. On the other hand, the effect is a part-species of the cause. Cause and effect must imply each other, hence the triad of existing in a cause, in its own institution, and in the participant. Proclus' theory of causation refers to the same things as his theories of wholes–parts, participation, power, and remaining – procession – reversion.

8. POWER

Proclus distinguishes the perfect, complete, from the imperfect, incomplete power (*dynamis*). Power is the second term of many triadic structures in Proclus' metaphysics, notably existence – power – activity, and cause – power – effect.

Dynamis originally meant power and influence, including political power. This active connotation of 'power' was always tempered by the sense that power does not mean the actual exercise of 'force' (*bia*), but the likelihood to become overt. Of course, some are much stronger than others. In general philosophical discussions, 'power' signified the ability to interact with, and affect, other things. Thus it came to mean the quality, the faculty of a thing. Qualities (*poiotêtes*), such as hot and cold, are the means by which things 'affect' (*pathos*) each other, and us, in events. Aristotle slanted *dynamis* towards its passive sense, and redefined it as the potentiality to become something, the capacity to pass into actuality (*energeia*). Potentiality thus became part of the description of matter. Later, Platonic and Aristotelian ideas linked with the Stoic concept of the 'connective power' (*synektikê dynamis*) of the all-pervading pneuma, and led to the concept of universal 'vital power' (*vis vitalis*, *zôtikê dynamis*). Further developments in ontology and theology took the notion of power to lofty heights, such as Philo's (20 BC–AD 50) identification of 'powers' with the Platonic Forms, and Plotinus' conception that there is power in every intelligible Form.[41] Later Neo-Platonists combined these strands of thought. By Proclus' time, 'power' refers both to something peculiarly individual to an entity, and to its means for interaction with the rest of the universe. Power is central to his philosophy of being.

For Proclus, the cause has power in an active sense, that is, the ability to produce: to produce continuously and necessarily. The cause that can act does act; there is no option of withholding causal production. Indeed, this is one of the main differences between Neo-Platonic metaphysics and Christian theology. The Neo-Platonic God acts spontaneously by necessity. Because the dividing line between the perfect power and its full actualisation is so thin, Proclus calls this power of the causal activity the 'power in-activity' (*kat' energeian dynamis*) (Proclus, *El. Th.*, prop. 78). More often he refers to it with phrases that evoke wealth, water streams and eucharism: 'superabundance of power' (*periousia dynameôs*). That is, the cause acts externally because its power cannot be held back; it is 'unbounded'. As we shall see in Chapter 3, section 9, on Limit and the Unlimited and The One, this was the Neo-Platonic answer to the mystery of why a perfect entity, God, came to produce an imperfect world.

Power in the passive (Aristotelian) sense is the 'imperfect'. It is not characteristic of the cause, but of that which is about to be caused, viz., the effect. Since causation involves the transmission of property, participation, the effect is the participant by another name, and the 'imperfect' power is the participant's 'fitness'. This also explains why the effect's power is passive and 'imperfect'. The effect is but an instance exemplifying the causal property. The effect supplies the condition, the 'power', for the causal event to complete, but until it does, the effect remains, as it were, half-full.[42]

So a causal event is fulfilled with two kinds of power. To use a rough analogy, buying a house or property involves the transference of title from the seller (cause) to the buyer (effect). Selling (to cause) and buying (to be caused) are polar aspects. First, there must be a seller actively offering a property for sale. Secondly, seller and 'potential' buyer must somehow meet each other. Thirdly, the sale is not complete until the buyer has raised enough money to give to the seller. Platonic metaphysical realism means that all this happens in a seller's market. The seller fixes the price. Now, whether a causal event is likely to be completed or not depends on the level on which it takes place, that is, what kind of event it is. If it is logical, intelligible, then cause and effect imply each other completely, and the causal event occurs necessarily. In our analogy, the seller and buyer are equally keen to complete the transference. At the physical end, the bond of implication between cause and effect is not so strong. Such events and beings are ruled by time and space, where contingencies are the norm. The mortgage application might fail, the buyer's employer might order a job relocation, and so the title-transference might not be completed.

> The phenomenal orders invite the invisible powers (*aphaneis dynameis*) through the fitness (*epitêdeiotêtos*) of their own summits, and the powers perfect them through the excess (*hyperbolên*) of goodness, and they all are joined together, and the transmission (*metadosis*) of perfection (*teleiotêtos*) becomes the reward (*antapodosis*) of the offering (*proklêseôs*). (Proclus, *In Tim.*, 1.25.25–30)

> All that comes to be is generated from the twofold power. For the product must be suited for it and possess an incomplete power, and the agent, existing in actuality (*kat' energeian*) what the product is potentially (*dynamei*), must already have a perfect power. For every actuality proceeds from the indwelling (*henousês*) potency . . . The agent acts on everything that is capable of being affected, but not on any chance thing, which by nature might not be affected by it. (Proclus, *El. Th.*, prop. 79)

Internal and independent powers

In the previous passage, and in several others, we find curious descriptions of powers that have presented problems to some readers. There is an 'indwelling' power; a power that is 'hidden' – a label straight out of the revelatory sources of later Neo-Platonists, the 'Chaldaean' Oracles and the Orphics. A power sometimes has its own *hypostasis*. What are these powers? Are they one or different? Do they refer to a third, internal kind of power? Do they conform to the hierarchy of being?[43]

In the above quotation, Proclus looks behind the actualisation of a causal event and finds that it requires an 'indwelling' potency. A certain activity presupposes the appropriate kind of power to act. We see Proclus saying the same when he observes that living beings have an 'inborn' capacity for growth as evidenced, for example, by the growth of adult teeth in place of the infant (Proclus, *In Parm.*, 792.30). In fact this is the theme of natural capacities, which was introduced by Aristotle (if not by Presocratics) and developed by the Stoics with their concept of reason-principle (*logos*). When Plotinus talks of 'inner' natural powers (Plotinus, *Enn.*, 2.3.17.6) and of an 'inner' sensory faculty (*Enn.*, 4.8.8.10), he is tapping the same vein. Moreover, when Plotinus tries to explain how Intellect came into being, he distinguishes two kinds of activity (*energeia*). The one belongs to the substance (*ousia*) of a thing, and the other flows out of it (*Enn.*, 5.4.2.25f.). What we get after Plotinus is the grand expansion of the non-physical domain, characteristic of (late) Neo-Platonism. Correspondingly, 'inner' capacity extends to all levels of being.

Simplicius, the last of the Athenian Neo-Platonists, encapsulates the complicated nuances of 'substance', 'power' and 'activity' in this lucid section.

> What is potentially is different from power. That which is actually stands opposite to what is potentially, and the activity is opposite to power. Power is the perfect predisposition [*paraskeuê*; cf. Plotinus, *Enn.*, 4.6.3.58] of substance, and the unhindered aptitude [*hetoimotês*; *Enn.*, 6.1.8.10] towards the actualisation productive of activity. But being potentially is the imperfect fitness, according to which is called 'potentially', viz., receiving what is actually from something else, and not because it can project it from itself . . . Activity (*energeia*) is opposite to what is potentially (*dynamei*), and is the active movement projected from power. Active is what results in a product (*en tôi ergôi*). A product is the result of either a creation (*poiêsis*) or an action (*praxis*). From the power that remains internal

> (*endon menousês*) and not overt (*mê ekphanous*) was derived the name of 'potentially', i.e., the substance being regarded in terms of the aptitude alone, which is, sort of, the disposition of the substance itself. Again, from the activity was derived the name of 'actually', i.e., the substance being regarded as active. (Simplicius, *In Phys.*, bk 9, 400.26–401.1)

Consider two points here: the internal power is 'not overt'; and 'it is, sort of, the disposition of the substance'. In other words, an entity affects in the manner of its own nature (in the ontological sense). A substance has a certain capacity, a condition, a 'sort of predisposition', which does not become obvious, overt, until an action brings about an event. The predisposition is hidden, but the action is manifest. Now, the distinction between overt and not overt, that is, 'hidden', is what we find in Proclus, too, but with a difference. Power is not a single, rigid thing but a continuum with different modes. As I read it, the capacity natural to the substance itself remains hidden. However, the capacity concerning a specific action is active and manifest.

> For the power is everywhere the cause of prolific processions and of all plurality (*plêthous*). On the one hand, the hidden power (*kryphia dynamis*) is the cause of the hidden multitude, and on the other, that which is in activity (*kat' energeian*) and made itself overt (*heautên ekphênasa*) is the cause of all completed multitude. (Proclus, *Theol. Plat.*, 3.39.11–14)

Power is not defined in itself, but in respect to what the power is *for*. A thing's natural capacity is its 'indwelling' power to be and to maintain its character. Yet, as in many realist philosophies, the thing in-itself, the object in isolation, is unknown. Nothing outside it can tell what it is, until somehow its character interacts externally through some course of action affecting the observer. Proclus and other Neo-Platonists speak repeatedly of the inner power 'projecting' to activity. Although potentiality changing to actuality is a typical Aristotelian theme, the concept of projection is un-Aristotelian and distinctly Neo-Platonic. Moreover, by Platonic metaphysical realism, the quality or power is more real and active than the instances in which it manifests. For every intrinsic power there are many possibilities to become externally overt, and for every such possibility there are many instances in which to happen. So, it would be most inadequate to speak of the inner power and its action as if they were one thing. This, I suggest, is the reason why Proclus distinguishes a power in-activity. It is the capacity *for a certain type* of action or event. It is no longer 'hidden' but manifest, precisely because it is attached to things knowable (actions, events). Proclus' references to causation as participation validate this line of argument. The cause's inner power is equivalent to the imparticipable property, the powers in-activity to the multitude of participable properties that can be made manifest, and the cause's activities are equivalent to the series of participants, which are the actualised instances of each participable type.

> For every producer (*paragon*) produces according to its own power, which is allotted a substantiation (*hypostasin*) between the producer and the products. On the one hand, this power is the producer's procession, and is so to speak the extension (*hoion ekteneian*), and on the other, it is the generative cause of the product, which has been set immediately before it. (Proclus, *Plat. Theol.*, 3.31.20–3)

> All that is participated in a separable manner (*chôristôs metechomenon*) is present to the participant through an inseparable power, which it bestows. For if itself exists separate from the participant, and does not inhere in it, since it has acquired its own substantiation (*hypostasin kektêmenon*), then they need a mean term to connect them. (Proclus, *El. Th.*, prop. 81)

From this reading of causal power, it is clearer why Proclus assigns an independent status to a certain kind of power. It is the power equivalent to the 'separable participable'. The 'substantiated' (*hypostaton*) power is the power in-activity that is self-actualised.

Remember (section 6, Participation, and Self-sufficiency) that the state of *hypostasis* is not inherent to a thing. Superior principles supply it as an attribute, and serve as foundations. For this reason, I suggested the translation 'substantiation'. In the case of the 'self-substantiated', the same thing is both the giver and recipient of the attribute. What this means in the present context is that 'substantiation' is transitive, the result of a generative action. Actions are activities. So, the self-substantiated is self-actualised (Proclus, *In Parm.*, 785.20). A survey of Proclus' texts confirms this reading. The kinds of entities said to be self-actualised are souls, spirits, intellects, the principles of Being and Life, etc. That is, they are the same entities attributed also with self-substantiation (*authypostaton*). Self-actualised things have the means to move by themselves and revert to themselves (see section 9 below, Remaining, procession, reversion). Self-reversion, the ability to preserve self-identity, is the chief character of things self-substantiated.

Further, I have already explained why the 'separable participable' is the linchpin of Proclus' system. It supplies a reality that is knowable but independent of individual thinkers, and renders scientific knowledge possible. We can now make an equivalent case for the substantiated self-actualised power. Now, there are many thematic ways of looking at 'power' and 'activity'. A familiar one is quality. Active power is the means by which a thing affects others. In this sense, it is the thing's perceptible quality. Normally, qualities are actualised in subjects. But here we have qualities made manifest by themselves. What are they?

They cannot be secondary qualities (after Locke) because they exist independently of personal minds. The ordinary powers in-activity (viz. the non-self-substantiated) fill neatly the function of secondary qualities, because they only manifest in subjects (observers), and are caused by others. On the other hand, the 'inner' quality is not in-activity; it is 'hidden'. The Neo-Platonic 'inner' power is the culprit for the Scholastic 'occult' qualities and 'essences' that flourished in the medieval and early modern periods. Although they fell into disrepute when they became the repository of magical sympathies, originally they denoted powers which we cannot observe, such as gravity and magnetism. In this respect, beginning with Newton, power was reintroduced in modern physics, and remains the staple of theories of fundamental forces. So, we must conclude that Proclus' substantiated powers in-activity are equivalent to the so-called primary qualities. We can experience primary qualities just like the secondary, but because they are fundamental to real objects and independent of individual observers, they constitute the objects of scientific knowledge. Above all, they render possible the scientific understanding of things and events by providing a bridge between human, subjective knowledge and the impenetrable reality.

9. REMAINING, PROCESSION, REVERSION

The classic Neo-Platonic threefold scheme is 'procession' (*proodos*) – 'reversion' (*epistrophê*) – 'remaining' (*monê*). A thing 'proceeds' from itself to multiplicity, and 'returns' to it, while its characteristic identity 'remains' unchanged. What 'proceeds' becomes diluted and altered by the conditions in which it is found (for example, life becomes animal life, human life). However, what 'descends' into plurality must not be cut off from its original state, for it would lose its definition. 'Reversion' is the tendency or movement to maintain the original definition, which 'remains' unconditioned. For example, human life 'remains' a life, and does not become a body-part.

The three are phases or moments in a single continuous process that infuses unity–diversity, causation and predication with vitality and movement. The Neo-Platonic hierarchy of being, knowledge and value is not frozen rigid in its systematic structure, but is an expression of a dynamic process. Because procession – reversion – remaining is fundamental to all modes of being, corporeal and incorporeal, timeless and measured by time, it predates, as it were, the dimensions of time and space. Moreover, it is essentially a metaphysical and logical relationship. This may lead a reader to think that 'procession' (to use the term as a shorthand for the three) is solely logical and something static. How can anything be swept in a motion without time and space? Such misunderstanding would be especially unfortunate, because for Proclus 'movement' is not reserved for the domain of physical time and place (Aristotle), nor is it divided into an intelligible and a sensible one (Plato), nor is procession and reversion just for the conscious soul and cosmic strata of being (Plotinus). For Proclus, remaining – procession – reversion apply to every form, property or entity (with the One and Matter in exceptional positions). Pure movement, dynamics, is central to all.[44]

'Procession' is intended to answer the same questions as participation and causation, but concentrates on an aspect which they ignore. Things become tangled in a web of effects and attributes necessarily and continuously. The problem is (according to the Neo-Platonists) that when something extends to something else, it loses its identity and definition. A cause produces an effect by transmitting its property. How can the same property be in the cause and in the effect? A subject takes an attribute or property of something else. How can the attribute be in two different states? Worse still, it can be in contrary states. So, properties and attributes cannot be rigid. The solution must be dynamic.

Remaining – procession – reversion may also be viewed as an answer to the problem of meaning. In 'procession', we encounter many different instances (participants) of a certain term. Each supplies a different sense. What gives them meaning is the term to which they refer. This reference is what 'remains' the same and constant. How do the particular senses relate to the reference? They do so by 'turning' towards it, and evaluating by what degree they are still true or not.

Settling for a dynamic solution is one thing. Finding concepts with which to capture such a mercurial solution is another. Proclus draws on three analogies taken from mathematics and physics: the arithmetical, the emanative and the motive.[45]

According to the first, the original property is like the arithmetical monad, number one. By self-addition it yields many other numbers, numbers two, three and so on, proceeding to infinity. The monad itself stays undivided and unaltered through the process of number-generation (there are several antecedent authors of this theory, mostly Neo-Pythagoreans). Moreover, we can conceive the process working in the reverse direction, from the series to its monad.[46] According to the second analogy, the source of a property is like that great radiating body, the sun. The sun exudes light, which radiates to the innumerable parts of the cosmos, Yet, the emanation (*eklampsis*) leaves the solar source undiminished (or let us say visibly undiminished, to allow for the conclusions of modern science on the longevity of stars). This was Plotinus' favourite analogy.[47] According to the third, the cause is like a mover unmoved (*akinêton*) (from Aristotle's ontology of the ultimate activity, *nous*). That which has the will and power to bring about motion acts on its initiative, is moved by itself (according to Platonic theory of motion). That which is moved by external agents Platonists called the 'other-moved' (*heterokinêton*).[48] All three analogies illustrate a process of change (multiplication, radiation, motion), which is anchored to an unabated origin. Of the three, Proclus tends to favour the numerical, inasmuch as it allows a return to the definitive monad.[49]

In what direction does 'procession' travel? Proclus supplies a quick and clear answer. Procession moves in the direction of participation.[50] Moving from original to copy involves a change of substance, and so does moving from copy to copy. The city of St Albans is not the same as its photographs, nor as its paintings, Shakespearean references, etc. Nonetheless, before participation, in the strict sense, there is a multiplication of whole to particulars. Only then do the particulars 'proceed' to their instantiations.

> Socrates should have replied that 'like' (*homoion*) has two senses: one the likeness of two coordinate (*syzygon*) things, the other the likeness of a subordinate to the archetype. The former is to be viewed in the identity of a reason-principle, while the latter has not only sameness but also otherness, whenever 'like' means having the same Form derived from that other, but not along with it. (Proclus, *In Parm.*, 912.32–8)

The basic sequence of proceeding from that which remains, and returning to the same, Proclus calls appropriately 'cyclic'.[51] As was mentioned earlier, it is the metaphysical relationship between cause and effect viewed in dynamical terms. Therefore it is primarily a motion outside, or more accurately prior to the creation of, time and space.[52] From this cyclic process all phenomenal movements emerge, including the rotation of the celestial bodies. Proclus derives their movement not from a philosophical and geometrical axiom, like Plato and Aristotle, but from the very nature of causality.[53]

The 'cyclic' process becomes complicated once we take into account that 'procession' and 'origin' are multi-layered. First, as we saw earlier in section 3 on similarity, like things link with like in two senses: in respect to whatever is immediately similar; in respect to a unity common to a whole class. Moreover, insofar as the triplet, remaining – procession – reversion, concerns maintaining identity in diversity, then *each of* the three can be analysed into an internal triplet, remaining – procession – reversion, too. Procession and reversion spread out following the many possible paths delineated by similarity, like plant roots seeking after water.[54]

Secondly, finding where 'reverting' is headed depends on what is the 'remaining': is it the proximate origin? Is it one of several deferred origins? Is it the origin in the fullest sense? Study how Proclus considers a property: not as limited to a single species, but as an archetype to a series of them, some having the property more, others less (see section 6, Participation). Each (self-sufficient) station in the line of participants can be the referent origin for a 'procession'.

We can picture this as tenancy and subcontracting under covenant. You find a nice flat and decide to make it your home. So you become a tenant. Your regular payments go to the person who offered you the tenancy. One day you find that all the bathroom tiles have fallen down, some having damaged the bath. You call the person from whom you obtained your tenancy, and to whom you pay the money, and ask him to fix it. He tells you that he is himself a leaseholder with the licence to sublet, and gives you the name of the person from whom he obtained his lease. You contact that person, and discover that she is a tenant, too. Eventually you are given the name of a foreign corporation, which is the current freeholder of the building. They accept responsibility but inform you that they have to pass the matter of repair to their management company. The latter, in turn, hire the contractor, who hires the worker, who finally comes and fixes your bathroom.

This nightmarish experience of the layers of contracting well simulates how 'reversion' need not be strictly 'cyclic'. The tenant is a subject with a certain property (the lease) – or more strictly, it is an instance of the property. Tenants ensure that they remain tenants by maintaining legal title. They do so by 'returning' to the one from whom they obtained the tenancy lease, and paying the appropriate price. But to exercise title in the fullest possible sense, tenants have to 'revert' eventually to the freeholder. The freeholder is 'imparticipable', but possesses titles available for 'participation'. Full title 'remains' with the freeholder. The freeholder can distribute the property-title, that is, let it 'proceed' to a series of subordinate licence-holders. Thus, title becomes successively diluted, and conditioned by subcontracting.

Being in threes

The triad of remaining – procession – reversion is one of a cluster of threefold arrangements with a common theme. Any one thing or attribute can be taken in three distinguishable senses: its essential unchanging nature – the power to relate it to others – the result achieved. Because power is really a fluid continuum, not a discrete state, Proclus often distinguishes two or more modes. So, his threefolds are often simplified fourfolds and multifolds.

When two of the three elements form a pair of opposites, then we get dialectical-type triads of the sort that Hegel went on to glorify fourteen centuries later. For example, there is the triad finitude/limit (*peras*) – infinitude/unlimited (*apeiria*) – mixture (*mikton*). The classical Greek source for it is Plato's *Philebus*, and earlier in the Pythagoreans and other Presocratics (Aristotle, *Phys.* 3.4). A sister triad is that of male (*arrhên*) – female (*thêlys*) – resultants (*apotelesmata*, *gennêmata*).[55] For Proclus, the first member of these triads represents the essence of discreteness, and the second that of continuity, whereas the third is the product mixture of the first two, every being (*on*) in the universe. Limit is equivalent to 'remaining' insofar as it is the boundary of the thing's own definition. The unlimited is equivalent to 'procession', when we regard 'unlimited' as having no imposed boundaries. If we concentrate on one thing alone, there is nothing else apart from it to impose a bound from outside, as it were. The mixture is equivalent to 'reversion' only in the sense that what has proceeded has essentially become something new, that is, a mixture of original and other properties. In other respects, reversion is not analogous to mixture, but rather to activity and intellect.

Other threefold arrangements are: real existence (*ousia*) – power (*dynamis*) – actuality (*energeia*); unqualified existence (*hyparxis*) – qualification/ power (*dynamis*) – activity (*energeia*). They are loosely based on Aristotle's theory of physical change. However, Aristotle does not use *hyparxis* technically, nor does he have these sorts of sequences: activity is presupposed for a potential (*dynamis*) to actualise the character of the species, but (e.g. *Nic. Eth.*, 2.1:1103a25) for an individual member the potential is required before actuality. Proclus develops them into a highly sophisticated unit denoting the three-into-one relationship of essences (physical or not), the capacity and power to act, and the actualisation of the action and quality. *Ousia* means the reality of a thing, its substance, while *hyparxis* is pure existence. So, along with 'being' (*on*), they are as good as synonyms. The key difference is that *hyparxis* alone is broad enough to cover the level of pure unity and the divine. According to (Neo-)Platonic metaphysics, the prime principle of a thing must be uncontaminated by qualifications, even that of substantive being. Unity is also the foundation of all manifested realities. Thus, it is worth thinking of *hyparxis* as institution (Damascius will call such existence 'essence alone' and 'foundation'). Power is equivalent to procession in two senses: it 'overflows out' of the thing, and it does so spontaneously. Reversion is equivalent to activity insofar as what is actualised mirrors the essence of the thing. By introducing the triad within each of its three elements, for example activity of power, power of activity, and by combining it with the triad of cause– power – effect (see sections 7, Causation, and 8, Power) Proclus can describe minutely the stages of causation.

Proclus frequently interchanges the triads of existence – power – activity with the triad reflecting the three main levels of the intelligible domain: being (*on*) – life (*zoê*) – intellect (*nous*).[56] This triad may stem from Porphyry, although earlier we find it suggested in Plotinus' interpretation of the *Sophist*, where Plato introduced movement among the intelligibles.[57] For Proclus, the principle of life does belong to the intelligible domain, and exemplifies the 'procession'. The intellect's ability to fixate checks the forward striding of procession. Intellect 'turns' towards the state of pure being, which 'remains' determinative, undiminished and unaffected. Pure being is the substance of the intelligibles, life is their power to engender multiple forms, and intellect is the activity. From another viewpoint, intellect is the thinking subject, life the thinking process, and being the object of thought. Like in the triads of procession and that of power, the triad of being – life – intellect can be introduced within each of its elements, for example, being of intellect, life of intellect, intellect of intellect, to delineate fine structural distinctions. To summarise, each manifold that is less unified is in succession less whole, less general, less complete and a less potent cause. Correspondingly, it has more members. Next, we will see how Proclus' scale of being works.

NOTES

1. 'Golden rule of Neoplatonic metaphysics': A. C. Lloyd, 'The later Neoplatonists', in the *Cambridge History*, ed. Armstrong. 'Practically analytic': Lloyd, *The Anatomy of Neoplatonism*,

p. 155. De Rijk, 'Causation and participation in Proclus, the pivotal role of scope distinction in his metaphysics', in *On Proclus and his Influence*, ed. Bos and Meijer. Wallis, *Neoplatonism*, pp. 33, 123–4, calls the 'all in all' theme 'the principle of Correspondence'. Proclus however stressed the *oikeiôs*, the appropriateness, equally; cf. *Plat. Theol.*, 1.42.20–43.21; *In Tim.*, 1.36.7; 43; 2.26.28; and 3.169.10, passim, as the variant 'everything is everywhere existing in proportion'. As to the origins of the theme, 'all in all' and 'predominance' (*kratein*) of a specific quality appear in Anaxagoras' theory of mixture, Aristotle *Phys.*, 1.4, 187a–b. As a metaphysical principle, Syrianus, *In Metaph.*, 81.31–82.4, credits the 'Pythagoreans' with its invention: probably he has in mind Iamblichus' ref. to Numenius.

2. Particular intellects have specialisation: Proclus, *El. Th.*, prop. 170.
3. Reversion as analysis: Proclus, *In Crat.*, 3.7–8.
4. Dodds, *Proclus Elements*, p. 236 (notes on prop. 65). Cf. Proclus, *In Tim.*, 1.8.15–20.
5. Like perceives like: Plotinus, *Enn.*, 1.6.9; cf. 5.3.4.
6. Proclus, *Plat. Theol.*, 3.6, 7, 12. On twofold similarity, *Plat. Theol.*, 6, p. 352 (Portus). 'Similarity' as a cosmological principle derives from the very old and well-established notion of *homoios* in Greek thought.
7. See Dillon, *Proclus Parmenides*, pp. 326–8.
8. Proclus, *In Tim.*, 1.209.24–210.9 noted by Dodds, *Proclus Elements*, p. 217 (on prop. 30); Rosán, *Philosophy of Proclus*, p. 74; Festugière, *Proclus, Comm. Tim.*, 2, p. 31 n.1.
9. On similarity and sympathy, see Proclus, *El. Th.*, prop. 28; Dodds, *Proclus Elements*, translates *sympathes* as 'attuned' (p. 216). Moreover, sympathy seems to follow similarity in being both general and specific: cf. Proclus, *In Tim.*, 1.36. In Plotinus: *Enn.*, 4.4.32, 38–45. Also cf. Iamblichus, *Myster.*, 3.14–16; 4.8–10; 5.7. On the concept of cosmic sympathy, see M. Pohlenz, *Stoa* (1959), 1, pp. 230, 360, 391–2, and C. Reinhardt, *Kosmos und Sympathie* (1926), pp. 170–209.
10. Whether the Neo-Platonists originated, or anticipated, the concept of action-at-a-distance is a vexed question. For Max Jammer, *Concepts of Force* (1957), pp. 36ff., 148f., the sympathetic linking across the body of the universe is equivalent to action-at-a-distance. Sambursky, 'Conceptual developments in later Greek thought', in *Scientific Change*, ed. A. C. Crombie, esp. pp. 61–4, 78, maintained that thanks to their philosophy, the Neo-Platonists progressed further from the Stoic sympathetic field of force of the 'pneuma' and originated the notion of action-at-a-distance. G. E. L. Owen, however, pp. 98–102, was critical of this claim, pointing to the psychological aspects. For the wider issues of the notion, see M. Hesse, 'Action at a distance', *Concept of Matter in Modern Philosophy*, ed. McMullin, pp. 119–37. She mentions also telepathy and psychokinesis in relation to action-at-a-distance, which may be relevant to Neo-Platonism.
11. A. E. Taylor, *A Commentary on Plato's Timaeus*, p. 278. D. Hamlyn, *Sensation and Perception* (New York, 1961).
12. The law of 'mean' terms fitted in a variety of contexts, philosophical, religious and social. With the increasing emphasis on the transcendence of God came the need of intermediaries between man and God, whether daimons, angels or priests (e.g. Wallis, *Neoplatonism*, pp. 11, 123, 130). This had its parallel in the structure of the late Roman empire, especially the gradual theocratic elevation of the emperor, and the heavily bureaucratic administration. The latter meaning of *meson* survives in modern Greek, doubtless through Byzantium, to indicate the official who can intervene and mediate on one's behalf. Philosophically, Plato had employed the terms *mesos* and *metaxu* to describe the class of entities between the Forms and the particular sensibles: the soul, *Soph.*, 248e–249d, and the mathematicals, *Phaedo* 74c, *Parm.* 129b. However, the passage which relates directly to the role of 'binding' is Plato, *Tim.* 31bc, where the Elements of Fire and Earth are said to be in need of a third median bond (cf. Proclus, *In. Tim.*, 2.13–18).
13. Proclus' realism of thought: *In Parm.*, 1054, 895–7.
14. Wholes–parts: Proclus, *El. Th.*, prop, 67–9.
15. Monad and henad: Proclus, *El. Th.*, props 21–3.
16. Unity and universality, completeness and power, and their relation to division: see *El. Th.*, props 60–2, 93–5; in the latter, division and loss of unity is equated with infinite division, through intermediate steps of relative infinity; see Dodds, *Proclus Elements*, notes pp. 248, 233. See also Proclus, *Plat. Theol.*, 3.14.20–2.
17. For participation, cf. Plato, *Phaedo* 100, *Parm.* 129–33. For studies, see for example R. E. Allen, 'Participation and predication in Plato's Middle Dialogues' (1960), article 4 in *Studies in Plato's Metaphysics*, ed. R. E. Allen (1965); cf. G. E. L. Owen, 'The place of the *Timaeus* in Plato's Dialogues' (1953), art. 16, ibid. The asymmetry is consistently maintained by Proclus: 'to participate' cannot properly mean 'to possess' as Rosán, *Philosophy of Proclus*, translates it, except

in the case of the dependent participated property; however, the higher entities are not totally unaffected by the lower: *El. Th.*, prop. 80. See J. Barnes, 'Immaterial causes', *Oxford Studies in Ancient Philosophy* 1 (1983), 169–92. Proclus also employs the term *metousia*, for example in *In Tim.*, 1.18.16, and *Decem. Dub.*, 20.10, 22.16. Moreover, 'partaking' seems to have almost eucharistic connotations, especially in connection with the notion of 'overflowing power' (*periousia dynameôs*): for example *El. Th.*, props 27, 121, and cf. pseudo-Dionysios, *De Divinis Nominibus*, viii.6.

18. Aristotle, *Topics*, 121a, 123a, 143b.
19. The Stoic Chrysippus defines 'definition': in Diogenes Laertius, *Vitae*, 7.60.9 = fr. 32C2 in *Hellenistic Philosophers*, ed. Long and Sedley. Commentary on this and related passages: ibid., 1, pp. 190–1, 194.
20. On property: Porphyry, *Isagoge*, 12.17–22.
21. Property and difference: Porphyry, *Isag.*, 19.10–15.
22. Property and definition: Dexippus, *In Categ.*, 55.12–22; Ammonius, *In Categ.*, 44.8–15; Proclus, *In Crat.*, 3.1–8.
23. Porphyry on removal of differences and species, which keeps the genus 'in thought': *Isag.*, 15.1–5.
24. Standard genus–species for coordinate series: Lloyd, *Anatomy of Neoplatonism*, pp. 78–85; but at 79–80 he concedes that for Proclus all genera are hierarchical 'P-series'.
25. Two sorts of chains: known in the lore of Proclean studies as the 'vertical' and the 'horizontal', after Dodds, *Proclus Elements*, pp. 270, 282, and disputed since: Gersh, *Spiritual Motion*, pp. 68–78; *Iamblichus to Eriugena* (Gersh's diagrams); and A. C. Lloyd, 'Procession and division in Proclus', in *Soul and the Structure of Being*, p. 29.
26. Two sorts of genus and wholes: A. C. Lloyd, *Anatomy*, ch. 3, 'Quasi-genera and the collapse of substance and attribute'.
27. Proclus, *El. Th.*, props 40–51, 63, 64, 81. See J. Whittaker, 'The historical background of Proclus' doctrine of the authupostata', in *De Jamblique à Proclus* (1974), art. 7, who identifies it with the notion of self-causation; also Gersh, *Spiritual Motion*, pp. 128–35; J. Trouillard, *La Mystagogie de Proclos*, pp. 187–206; for an analysis of *El. Th.*, props 63 and 64, see L. Sweeney, 'Participation and the structure of being', in *The Significance of Neoplatonism*, ed. R. B. Harris, esp. pp. 144–9.
28. Proclus, *El. Th.*, props 9, 63, 64; *In Parm.*, 1026; *Plat. Theol.*, 3.23–4. See also Trouillard, *Mystagogie*, pp. 198–206. The 'inseparable' participation is also denoted as *kath' hexin*, *In Tim.*, 2.313.1–4, meaning in the form of 'permanent possession'; it has Stoic and Aristotelian antecedents. Cf. *In Tim.*, 1.10.25–30, distinction between a 'separable' soul and an 'inseparable' nature, the one 'participated' but the other 'possessed' (*echon*).
29. Compare Dillon, *Proclus Parmenides*, pp. 261, 289. By Proclus' Neo-Platonic realism, *hypostasis* as foundation is not 'under' but prior and 'higher'. In a more general Neo-Platonic usage, it means existence (Dörrie, 'UPOSTASIS').
30. *Hypostasis* refers to compound entities: Gersh, *Spiritual Motion*, pp. 31–2.
31. Imparticipables as 'self-sufficient' and 'self-substantiated': *El. Th.*, props 99, 100.
32. As A. C. Lloyd points out, 'Procession and division in Proclus', in *Soul and the Structure of Being*, pp. 29–30, Proclus deals in this theorem with the 'return' rather than with the 'procession' and the acquisition of properties. Nevertheless, as Dodds states, *Proclus Elements*, p. 255, it can also apply to the causal paths of procession.
33. Triad of causation: for example *El. Th.*, props 7, 11, 47.
34. M. Frede, 'The original notion of cause', in *Doubt and Dogmatism*, ed. M. Schofield et al., pp. 217–49; Sorabji, *NCB* (1980), chs 1 to 3; Ph. de Lacy, 'The problem of causation in Plato's philosophy', *Classical Philology*, 34 (1939), 97–115. The pre-Aristotelian Greek theories about ultimate causes are given mainly in Aristotle, *Metaph.*, 983a–993a.
35. Cause and principle as road to a theatre play: Porphyry in Simplicius, *In Phys.*, bk 9, 11.24.
36. Sufficiency and autonomy: Frede, 'The original notion of cause', in *Doubt and Dogmatism*, especially p. 234f.
37. Elder is divine: Proclus, *In Parm.*, 684.8–10.
38. Primary causes have more effects and greater reach: *El. Th.*, props 56–60.
39. Proclus, *El. Th.*, props 70–2. A. C. Lloyd, *Anatomy*, p. 107.
40. Proclus accepted infinity in 'potential' and in 'power' as well as in division into parts: for example, *in Tim.*, 1.453.15–30; infinite *kata dynamin* exists both in the celestial and the sublunary realm. Cf. Sorabji, *TCT*, pp. 211–13, 218, 226–9. That the One cannot be an actual manifold was also a requirement of the theory of knowledge: an infinite One would render certainty in knowledge impossible; cf. Proclus, *El. Th.*, prop. 11, and see Dodds' comments, pp. 188–9, 245.

41. On Poseidonius and *vis vitalis*, see M. Pohlenz, *Die Stoa*, I 214–18, II 58, 107; F. Solmsen, 'Cleanthes or Posidonius? The basis of Stoic physics', *Kleine Schriften* (1968), 436–60; J. M. Rist, *The Stoics* (1978), esp. pp. 201–18. On Philo, see Dillon, *Middle Platonists*, pp. 155–66; there are similarities with the Chaldaean 'powers'. On Plotinus, see Wallis, *Neoplatonism*, pp. 49–51, 61–2.
42. On Proclus' perfect and imperfect power, see for example *El. Th.*, props 77–80. A. C. Lloyd, 'Neoplatonic logic and Aristotelian logic', *Phronesis* 1 (1955–6), 58–72 and 146–60; cf. Lloyd, 'The principle that the cause is greater than the effect', *Phronesis* 21 (1976), 146–56.
43. On internal power, see Rosán, *Philosophy of Proclus*, p. 67ff., who notes (n. 11) that internal power is unique to Proclus. Hypostatic power: Gersh, *Spiritual Motion*, 39–40. Separable participated: P. A. Meijer, 'Participation in henads and monads in the "Theologia Platonica" III, 1–6', in *On Proclus and his Influence in Medieval Philosophy*, ed. Bos and Meijer, especially pp. 85–7.
44. Proclus, *El. Th.*, props 25–35; A. C. Lloyd, 'Procession and division in Proclus', in *Soul and the Structure of Being*, pp. 18–45.
45. Analogy is central to the Neo-Platonic accounts. See, for example, Dillon, 'Image, symbol and analogy', in *The Significance of Neoplatonism*, ed. R. B. Harris, pp. 247–58; Coulter, *The Literary Microcosm*, pp. 39–59, 68–72.
46. *El. Th.*, props 21, 22, 10; *Plat. Theol.*, 3.7–9; Dodds, *Proclus Elements*, notes on prop. 209; Charles-Saget, *L'architecture du divin Mathématique et Philosophie chez Plotin et Proclus*, especially pp. 210–15.
47. Plotinus, *Enn.*, 4.3, 6.6; cf. Proclus, *In Tim.*, 2.102.7–27.
48. For example, *El. Th.*, props 26, 14, 17, 20; cf. Proclus, *El. Phys.*, 1.19, 31.
49. Proclus, *El. Th.*, prop. 21.
50. Participation and procession: Proclus, *In Tim.*, 2.46.10; *El. Th.*, props 63, 71; *In Parm.*, 1212.15; *In Rep.*, 1.89.12, inter alia.
51. *El. Th.*, prop. 33. Another way is to represent explicitly the triadic frame of the circle: see Gersh's diagrams in his *From Iamblichus to Eriugena*.
52. Gersh, *Spiritual Motion*, ch. 3 until the conclusion, but especially note 3, pp. 60–1.
53. Corporeal motion due to incorporeal powers and agents: cf. *El. Th.*, props 14–17, 80. Incorporeal and corporeal motion: cf. *In Rep.*, 2.126.8–10. Celestial motion: cf. *Plat. Theol.*, 4.21.1–5, *In Tim.*, 2.279–92.
54. For a comprehensive study of the complex offshoots of procession–reversion paths, see Gersh, *From Iamblichus to Eriugena*.
55. Male–female, father–mother, limit–unlimited: Proclus, for example, *In Tim.*, 1.48–50, 2.221, 12–5; *Plat. Theol.*, 1.122–3.
56. *El. Th.*, prop. 169; cf. *In Tim.*, 1.255.30–256.2; *Plat. Theol.*, 2.50–1.
57. Proclus, *El. Th.*, props 101–3; Plotinus, *Enn.*, 6.6–8.

3

KNOWLEDGE AND THE LEVELS OF BEING

1. THE NEO-PLATONIC CURRICULUM

Education at the Neo-Platonic Schools was not simply a matter of learning the subjects of the curriculum cerebrally, but of educating the soul. For Plato, the greatest sin is ignorance. However, Neo-Platonist teachers did not strive to implant knowledge in the student. From Aristotle and Plato, they had learned that human beings are essentially good and rational. They also knew that nothing is built on nothing. Education requires natural ability, experience in abstract thinking, and willingness to learn.[1] So, the teacher endeavours to stimulate the student's awareness, and direct it to the nature of self and being. With understanding, the soul is able to discriminate what is true and lasting and to become attached to it. Learning arouses a life of virtue.

For those who wished to remain students beyond the bread-and-butter courses of rhetoric and grammar, their studies were mapped out so that they would not only learn the cream of Greek philosophy and science, but learn their message in a judicious order and manner. For a late Neo-Platonist teacher like Proclus, the aim was, first, to provide a grounding in logical and philosophical thinking, and then to elevate the thinking processes gradually towards an understanding of reality and the first causes. The foundation of all existence and value was shown to be so unified and complete that no separate word or concept can adequately describe it. At most we can call it 'the One' (*to hen*), but even this name is an inadequate appropriation by our personal mind. It can be reached only through an act of 'union' (*henôsis*) with something very much like it, a 'unity' (*henas*), which is in every existent, including human beings. This unity is the self of being. A life of education and virtue leads to 'salvation' (*sôtêria*) and 'well-being' (*eudaimonia*), the sense of completion that matches the essence of all things.

The Neo-Platonic students learned Aristotle's logic, physics and metaphysics. They also studied the mathematics of arithmetic, geometry, astronomy and music (harmonics). For the study of realities they went to the Platonic dialogues, devoting in total six or more years to higher education. The curriculum deliberately reflected the Neo-Platonic view of the universe. In ordinary life, we mainly experience things with physical senses, ranging from our 'earth plane' to that of the stars. Between this domain and that apprehended by the intellect alone are the modes proper to mathematical objects, which bridge sense with abstract thought, and which model reality. Next are the grades of direct, objective thought. Beyond them is the domain proper to divinity, whose essential character is unity. This grade is beyond direct intellectual comprehension, but is also what is most essential in things. Thus, for Proclus, education and higher ethics must involve training in logic, epistemology and metaphysics. Studying the true nature of things is, according to this arrangement, a reaching-up, an 'elevation'. It is also a retracing of the stages of how things came into being. In Neo-Platonic terminology, it is a 'reversion' or return to origins and causes. Moreover, these origins and causes are the foundations on which things came into being, and are the simplicities out of which the multitudes of compound things arose. In looking for the essentials, we 'analyse' things and 'reduce' them. So, in casting our attention to higher things we recapture our metaphysical history to the first principles.

Students at the Neo-Platonic Schools aspired to progress in their intellectual and moral education from the lower and outer grades to the higher and inner. Following Porphyry's lead, later Neo-Platonists thought that Aristotle and Plato agree, are 'harmonised', as long as their respective philosophies are well distinguished. Aristotle is valid insofar as he refers to the concrete things of our ordinary experience, the general terms we construct with our minds, and the language by which we express them. However, true reality, independent of human categorisation, is only hinted at by Aristotle, and is better studied through Plato. The later Neo-Platonists frequently allude to the relative value of Aristotle and Plato in their harmonised scheme of Greek philosophy. They usually call Aristotle *daimonios*, which in their Greek jargon has the double meaning of 'ingenious' and 'an intermediary to god'. On the other hand, they invariably call Plato 'divine'.[2] In other words, Aristotle relates to Plato as an angel does to the word of god.

Later Neo-Platonists owed the curriculum, and particularly the order of Platonic dialogues, to Iamblichus (fourth century AD). Remarkably, they maintained it for more than two centuries in the late Roman university-schools with little change, and then passed it on to Byzantium. This, including the vital Aristotelian element, supports the claim that Porphyry and Iamblichus, rather than Plotinus, were the proper founders of mainstream Neo-Platonism. The curriculum was as follows (there were minor variations):

> Porphyry's *Introduction* (*Isagogê*) to logic.
>
> Mainly Aristotle's works, arranged by subject into:
> logic (beginning with the *Categories*, followed by *On Interpretation*, *Prior Analytics*, *Posterior Analytics*, *Topics*),
> ethics (mostly practical, with politics),
> physics (*Physics*, *On the Heavens*, *Generation and Corruption*, *Meteorology*, *On the Soul*),
> mathematics (from other authors, e.g. Euclid, Nicomachus, Aristoxenus, Ptolemy),
> theology or 'first philosophy' (Aristotle, *Metaphysics*).
>
> Plato's dialogues in two cycles:
> Introductory (*Alcibiades I*),
> ethical (*Gorgias*, *Phaedo*),
> logical (*Cratylus*, *Theaetetus*),
> physical (*Sophist*, *Statesman*),
> theological (*Phaedrus*, *Symposium*);
> Completion and summary of the first cycle (*Philebus*), then onto
> physical (*Timaeus*),
> theological (*Parmenides*).

The later Neo-Platonists classified virtue into seven. In ascending order, the natural and the ethical relate to the physical body and the habits formed during a person's life. Next 'up', the Plato syllabus aimed to cultivate the political or civic virtue (with the *Gorgias*, at least), the purifying (*kathartikê*) (with the *Phaedo*), and the contemplative (*theôrêtikê*) virtue (from the *Cratylus* onwards). 'Purification' was the necessary prerequisite to leading an inviolate philosophical life, that is, reaching the 'contemplative' virtue. Following the Iamblichean theory that names refer to realities through concepts, the *Cratylus* was supposed to deal with names, and the *Theaetetus* with concepts (*noêmata*). Studying from the *Sophist* onwards involved the realities (*pragmata*), physical and theological. Above intellectual virtue, the later Neo-Platonists placed the 'theurgic' virtue (see section 10 below, discussion on theurgy), which concerns the unity itself. This is the highest virtue which a human could reach. The seventh virtue, the 'paradigmatic', was reserved for the immortals.

Apart from the earlier ethical works of Plato, there are at least two glaring omissions: the *Republic* and the *Laws*. However, there is no evidence that these enjoyed less authority among the Neo-Platonists. Indeed, Proclus wrote a major commentary on parts of the *Republic*, and he frequently quotes from the *Laws*. Furthermore, as we have seen earlier, Marinus states (*V. Procli* 13, 14) that Proclus was taught the *Republic* with the *Laws* and Aristotle's *Politics* as part of the politics course. Probably these works were simply too long to fit into the standard curriculum.

The *Anonymous Prolegomena to Platonic Philosophy*, a collection of fragments of the late Neo-Platonists on the curriculum, inform us that Proclus omitted also the *Epinomis* and the *Letters* from the received list of the dialogues. The *Epinomis* was omitted on the grounds that it was not a work of Plato himself, but of an associate, Philip of Opus, and was intended to complete the unfinished *Laws*. The *Letters*, or *Epistles* (most of which are now regarded as spurious), were omitted apparently on stylistic grounds. Still, they were not rejected. The *Letters* are often quoted favourably by Proclus, and the Second enjoyed the special affection of the pagan Neo-Platonists. Proclus' enigmatic references to God as the 'king of the universe' in books two and five of his *Platonic Theology* are from the *Second Letter*. He taps into an old undercurrent of thought which regarded the *Second Letter* as Plato's voicing of Pythagoras' doctrine of the prime principle as the supreme sovereign.[3]

At any rate, Neo-Platonists did not study Plato, Aristotle and other schools of thought in a historical order. Their whole curriculum had a pedagogical 'purpose' (*skopos*), and each work had its own particular 'scope'. Although Neo-Platonists were keen to emphasise their adherence to the authentic doctrine, they expounded their own distinct philosophy in an innovative and original spirit. They did not follow authority slavishly but focused instead on what we may call the core meaning or intention of the doctrine. The same basic treatment they extended to literary figures, such as Homer and Hesiod.

Teachers of the Hellenistic period, including the Neo-Platonist professors, called this approach *exegêsis*, meaning interpretation. Like *mimêsis*, the notion of imitation of something perfect or stable, it was intended to extract meaning from past greats. However, in practice it amounted to the critical evaluation of past thinkers for their coherence and usefulness to contemporary problems. Correspondingly, the main form of expression was the commentary. The Neo-Platonists taught and wrote on both Aristotle and Plato. Proclus himself was a commentator both on Plato and on Aristotle. The topic is complex, for it involves both philosophy and philology.[4]

This is not to say that the Neo-Platonists were eclectics in the pejorative sense. They were careful about items of detail and meaning – the appellation 'most critical' was a mark of professional distinction.[5] Secondly, they knew when to distinguish between the exposition of the original doctrine and their own interpretation of it. An example is Proclus' *Elements of Physics*. While it appears to be an obvious source for Proclus' physics, it is in fact a résumé of Aristotle's theory of motion, an original summary of *Physics* and *On the Heavens*. Apart from the underlying 'scope', it contains no Neo-Platonism. By comparison, the similarly-titled *Elements of Theology* is not a summary of Aristotle's *Metaphysics* but Proclus' presentation of Neo-Platonic metaphysics. Both are study manuals.

The Neo-Platonic order of studies was not monolithic. There is evidence, for instance, that some Neo-Platonists preferred to start with practical ethics and then proceed to logic. Proclus added a new preamble. First he taught a history of all Greek philosophy, including Cynicism, Scepticism, Hedonism, Epicureanism and, of course, Platonism and Aristotelianism. Then followed a course on the usefulness of philosophy, its methods and definitions. In addition, there was instruction on the attitude which a student should cultivate during his evaluation of philosophical sources. Together they added up to the Ten Sections on philosophy. This was complemented by an introduction to the *Categories* in Six Sections. It included instruction on what is philosophy, and on the subdivisions of philosophical inquiry.[6]

On the curriculum topics, I should like to mention two: the role of mathematics, and the relationship of the *Timaeus* with the *Parmenides*. According to traditional Platonic philosophy, the mathematical entities point the mind towards the Forms. Arithmetic, geometry, astronomy and music are the four pillars of mathematical science. The first is the mathematics of numbers, the second of shapes, the third of the celestial movements and the fourth of harmonic proportions. In the Neo-Platonic syllabus, the main sources were the works of Nicomachus (first to second century AD), Euclid (fourth century BC), Ptolemy (second century AD) and Aristoxenus (fourth century BC). Nicomachus was a Neo-Pythagorean and author of the *Introduction on Arithmetic*. Euclid wrote the famous *Elements of Geometry*, which remained a standard textbook until the mid-twentieth century. Ptolemy wrote the great *Mathematical Composition* (*Syntaxis*), to be known later by its Arabic title, the *Almagest*. Aristoxenus was the author of several treatises on music and arithmetical proportion, including the *Elements of Harmony*. Both the sources and the fourfold division of the mathematical sciences – the quadrivium – became standard for European education until the seventeenth century and beyond. A quadrivium first flourished in early Roman education and may be traced to Plato's Academy.

> I think that Plato divided the types of knowledge of beings according to the first, median and last grades of reality (*hypostasesi*). To the indivisible realities he assigned the intelligible knowledge, which distinguishes what is intelligible with simplicity and all at once (*athroôs*)... To divisible things which are allotted the lowest nature, which are entirely perceived by the senses, he assigned belief (*doxan*), which perceives (*antilambanomenên*) the truth obscurely, while the median, such as the forms studied by mathematics, which fall short of the indivisible but are superior to the divisible nature, he assigned discursive knowledge, or understanding (*dianoian*). (Proclus, *In Eucl.*, 3.14–4.8)

Mathematics bind physics with metaphysics. Proclus' conclusion proved highly influential. The following quotation appears twelve centuries later, in the seventeenth century, in its original Greek on the title-page of one of the most revolutionary books in astronomy, Kepler's *Harmonices Mundi* I (1619):

> [Mathematics] makes contributions of the greatest value to physical science. It reveals the good order of the ratios according to which the Universe is constructed &c: It exhibits the simple and primal causal elements being continuous in every way according to symmetry and equality, through which all heaven was perfected, when it took upon itself the figures appropriate to its particular region. (Proclus, *In Eucl.*, 22.17–26)

The study of mathematics is central to the whole philosophy of education. Proclus' arguments against those who denigrate the theoretical sciences in favour of the practical are so penetrating and alive that they have a perennial value. Indeed, they readily apply to the modern debate on the scope of education and the funding of basic research.

> The *Timaeus* calls mathematical knowledge the road of education, because it has the same relation to the knowledge of wholes, or first philosophy, as education to virtue. Through unwavering habits education prepares the soul for a complete life, and mathematics makes ready our discursive thinking and the 'eye of the soul' to turn around to that upper world. (Proclus, *In Eucl.*, 20.10–17)
>
> There are nevertheless contentious people who put down the value of this science, some detracting its beauty and excellence . . ., others declaring that empirical knowledge concerned with sense objects is

> more useful (*chrêsimôteras*) than the universal theories. Land-measuring, they say, is more useful than geometry, popular arithmetic than the theory of numbers, and navigational astrology [star-studying] than universal astronomy. For we do not become rich by knowing what wealth is about but by using it, nor happy by knowing what happiness is but by living happily . . . Those who are ignorant of principles but practised in dealing with particular problems are by far superior in meeting human needs to those who have spent their time in the Schools pursuing theory alone. (Proclus, *In Eucl.*, 25.15–26.9)

> While we do not think it worth judging its profit with respect to human needs, nor should we make necessity our chief concern . . . We must posit mathematical knowledge and the vision that results from it as being worthy of choice for their own sakes, and not because they satisfy human needs . . . The purpose of mathematical science belongs to intellectual insight (*noun*), and wisdom as a whole. (Proclus, *In Eucl.*, 27.15–28.10)

Students studied Plato's *Timaeus* and the *Parmenides* in the second and highest cycle of the curriculum. Four years or so would have lapsed since the beginning of their studies. Proclus summarises the 'scope' of the *Timaeus* and the *Parmenides*, thus:

> The whole of philosophy is divided into the theory about the intelligible and that about worldly entities . . . the *Timaeus* concentrates on the study of physical things and the *Parmenides* on that of the divine . . . for Timaeus wrote about the nature of the universe and Parmenides about true Being . . . Therefore the divine Iamblichus correctly said that the whole of Plato's theory is embraced in these two dialogues, namely in the *Timaeus* and the *Parmenides*; for all the Inquiry about the encosmic and the supracosmic has the most excellent fulfilment in these two, and no order of existence is left unexplored . . . The *Timaeus* introduces the theory of encosmic things through images prior to the inquiry into Nature (physics) itself, and the *Parmenides* stirs up the quest about the Forms of the immaterial entities prior to the inquiry into divinity (theology, metaphysics); for after we have been exercised in arguments about the most excellent State, we have to be introduced to the deep understanding of the Universe, and after we have struggled with the strenuous and earnest queries about the Forms, we are sent forth upon the mystical theory of the unities (*henadôn*). (Proclus, *In Tim.*, 1.13–14.1)

From Middle Platonism, and still earlier, the *Parmenides* was not an exposition of a series of criticisms against the Platonic Forms and the notion of participation, but the main source of Plato's theology. The second part takes the form of a dialectic on the existence of One and Many consolidated into four pairs of antithetical propositions (Plato, *Parm.*, 137–66). These 'hypotheses' end by neither affirming nor denying anything about the One or Many. Of the possible interpretations of this conclusion, the late Platonists took Plotinus' lead (earlier by Neo-Pythagorean Platonists, such as Moderatus) and saw it as a series of affirmations and denials aimed at establishing an unknowable principle beyond the knowable Forms, which is the One undifferentiated. Each pair of contradictions is supposed to be resolved at a higher level, while the dialectic amounts to an examination of the precise nature of One and Many, layer by layer. Each of the eight, or nine, 'hypotheses' corresponds to a grade of being with its own 'scope'.

The professors of the Athenian School originated the division of the hypotheses into two groups: the first are those which suppose the existence of the One (*hen ei estin*) throughout, and the second are those which do not (*ei mê esti to hen*). The first, according to Plutarch, refers to true grades of reality, whereas the second refers only to 'shades' of existence. The first are five: the One, Intellect, Soul, forms-in-matter and matter; the second are four: sensible things, sense-objects, dreams and shades, anything beneath even dream-imagination. Syrianus, however, fine-tuned the first five thus: the One, divine unities, participated souls, forms-in-matter, matter.

In the last book of Proclus' commentary on the *Parmenides*, he shows how the soul ascends level by level, propelled by the intellectual need to rationalise and pulled by the inner desire to unite. At the summit, the One, distinctions are no longer possible, and the rational soul contemplates God in silence.

2. LEVELS OF BEING AND KNOWLEDGE

A Neo-Platonist's understanding of existence is that it is composed of modes, grades or levels. Some physical entities, such as stones and minerals, do no more than subsist and in time erode or break down. Living beings subsist and decay, but also grow and multiply (plants), move from place to place, feel, hold images, make choices (animals), exercise reason and contemplate abstractions (rational beings). To Proclus' analytical mind, we can do all these different things because we have the appropriate means: we exercise like on like. We occupy space with a body, reason with a mind, experience God with a spark of the divine.

To the Neo-Platonist, this means that entities are compounds, composed by as many layers of being as areas of activity in which they can engage. Each entity, a plant, animal, human and indeed the divine, is composed of one or more of such grades. Each entity is a unique bundle. A stone, therefore, has a substantive existence and a body with a characteristic nature (for example heavy, smooth). Plants have also a life. Animals possess also a personal life endowed with some mental qualities. However, according to Platonic realism, constitutive properties already exist as substances in their own right.

By analysing causes and principles, we unravel the metaphysical history. We retrace the sequence of how things came into being. Assuming that this followed the rule of parsimony, in retracing it we go from complexity to simplicity. On the other hand, the more primitive a layer of being is, the greater the number of entities it is present in. We may roughly compare it to biological evolution. The more primitive genes are common to many different species (say, mammals, amphibians, insects), but the more recent genes are found only in closely-related species (say, primates). Primitive genes seem to be responsible for general but fundamental patterns, such as the relative positioning of head, eyes and limbs. Recent genes are, however, responsible for the exact formation of the head, eyes and limbs characteristic of a species. In the field of logic, the premises of syllogisms are more general than the conclusions. Analysis leads from specifics to general principles.

Further, the more we comprehend both specific and general principles and causes, the more we gain a better and fuller understanding. The complete is synonymously (in Greek and Latin) the perfect (*teleion*). However, completion need not be absolute but can be relative: relative to a species or range (of knowledge, etc). So, there are grades of perfection (the 'imparticipables') and an absolute (the 'One'). We can arrive at the same conclusion by conceiving the process of analysis as a journey towards the first and more comprehensive principles. The thinker tries to grasp the object of thought by getting closer to it. Perfect knowledge results from the most intimate and direct experience of the object.[7]

Questions of the sort 'who am I?' and 'what is the good life?', which an inquirer at a Neo-Platonic School may be prompted to ask in the introductory grades of the curriculum (say, *Alcibiades I*), lead to epistemology and metaphysics. 'Know thyself' becomes a gateway to the full hierarchy of being and knowledge that culminates in the discovery of our 'root', unity.

Proclus' complete list of 'levels' of existence, the 'planes' of being, or '*diakosmoi*' (= world-orders) as he calls them, are to be found mainly in the *Platonic Theology*. In the *Elements of Theology* they are scattered in various parts of the text, so they have to be carefully reconstructed. However, there is an advantage in such a reconstruction, because the *Elements* mentions the level of Nature explicitly. The *Platonic Theology* stops just after the level which ought to correspond to Nature (as we shall see, this is not made absolutely clear).[8]

In the third book of the *Platonic Theology*, Proclus summarises lucidly the levels of being. He starts with the last grade in the hierarchical arrangement, that of our corporeal life, and continues in an ascending order. He takes us therefore on the journey of the 'return' of the soul.

> Of all forms of being, the very last (*eschaton*) is the corporeal (*sômatikon*)... For no body has either its own means of substantiation (*ou authypostaton*) or its own means of coming into existence (*oude autogenes*) . . . From where, then, does the being of bodies come and what by nature gives them their being immediately? Is it not, as we say, the primary cause of the existence of bodies, that which by virtue of being present enables the nature of that body (*sômatos physin*) to become more perfect and complete (*teleioteran*) than those of its own kind (*homogenôn*) which do not have it? . . . Of what is that which, as we say, makes the bodies which partake of it better (*kreittô*) than those which do not? This is evidently of the soul; for we say that the animated bodies are more complete than the inanimate (Aristotle, *On the Generation of Animals* 2: 731b29). Soul is the first to transcend bodies (*sômatôn epekeina*), and it must be admitted that all heaven and everything with a kind of body is a vehicle of soul (*ochêma psychês*). Hence there are two orders of being, as we have shown. One is of the body and the other which is above it (*hyper*) is of the soul...
>
> Again, just as perfect is the body which partakes of soul, likewise perfect (*teleia*) is the soul which participates in intellect (*nou*). Although not everything that participates in a soul is capable of rational life, intellect and an intellectual irradiation (*noeras ellampseôs*) can be partaken of even by those (i.e. animals) who have only a certain amount of cognition (*gnôseôs hestinosoun*). Moreover, soul's activity (*energein*) is in time, but the intellect's is in eternity . . . every intellect is always perfect (*aei teleios*) . . . therefore the class of intellect (*noeron genos*) in its being transcends soul...
>
> But is intellect the foremost of the kinds of being? No, for prior to it lies the breadth and plane of life (*zôês platos*). For the soul is indeed self-living, supplying herself with life, and intellect is the

> best, most perfect, and as we have already said, eternal life . . . it is necessary therefore that there is life by itself (*autozôên*). Which one is superior, life or intellect? But if the beings that are capable of cognition participate in intellect and such beings that do not have even a share (*amoiron*) in the faculty of cognition partake nevertheless of life – for we say that the plants live [cf. Plato, *Tim.*, 77b] – it is certainly necessary that life should transcend intellect, since she is the cause of more than the intellect and irradiates her own gifts to many more beings than the intellect.
>
> What then? . . . Is to live the same as to be? But this is impossible . . . for everything that partakes of real existence should also partake of life . . . but there are many things that are without a share in life, although all living beings have both a substance and a being (*ousia echei kai to on*). Therefore real existence was substantiated prior to the first-most life; for that which is more universal (*holikôteron*) and the cause of a greater number of effects is closer to the One (*eggyterô tou henos*), as it was shown earlier.
>
> So soul is primarily established above the bodies, intellect lies above soul, but life is senior to intellect, and being itself is established above all, being the primary existence. (Proclus, *Plat. Theol.*, 3.20–6)

> Prior to being itself, the One substantiates the unities, the *henads*, of beings . . . Put another way, it is necessary that those which exist as primary beings participate in the first-most Cause through (*dia*) these unities which lie immediately next to them. For each of the second is attached (*synaptetai*) to those prior to them through those that are similar to them, bodies through their own particular souls to the universal Soul, souls through their intellectual monads to the universal Intellect, and real-existents, which are primary, through their unified existence (*heniaiôn hyparxeôn*) to the One. For to be is by its own nature dissimilar to the One; . . . but the unities (*henades*) are substantiated by the imparticipable, and the exempt from all, Unity, and so are capable of linking the beings to the One and of making them return to themselves.
>
> These, it seems to me, Parmenides indicates by the second Hypothesis . . . for prior to the really real there must by necessity be the unities. (Proclus, *Plat. Theol.*, 3.13.4–17)

In descending order, Proclus' complete list of the modes of existence is as follows:

Unity (*henas*)	The first principle and goal
Being (*on, ousia*)	Substantive existence and the model of the universe
Life (*zôê*)	Process, power and the intelligible heavens
Intellect (*nous*)	Activity, unmediated thought and the crafting of the universe
Soul (*psychê*)	Spontaneous movement, discursive thinking
Nature (*physis*)	Physical properties
Body (*sôma*)	Corporeality and the visible cosmos

Of these, the first five, and the causal aspect of Nature, are levels of reality. Body does not possess the means of its own substantiation. So, according to (Neo-)Platonic thought, it is not 'real' but a shadow of reality: this is why Body is not examined in the *Platonic Theology*. Strictly speaking, unity is not substantially real, but is the first principle and cause of reality.

Linear tabulations are often misleading. First, they do not portray Matter as a 'universal receptacle'. Second, there is no horizontal hierarchy separate from vertical. The whole spectrum of the procession spreads like the streams of a fountain away from the unity of the One to the multiplicity of Matter. So, fundamentally there is one descent. What is usually shown in the vertical is the differentiation involving substantial change, for example intellect to soul. What is shown horizontally is the pluralisation within the same family of properties, for example intellects, souls.

The direction from things particular to things universal points to another arrangement of the grades of existence: a system of concentric circles in which the 'planes' become 'spheres' of being. Proclus employs one of them frequently to explain the fashioning of the world according to the account in Plato's *Timaeus*, especially where the world soul is said to 'embrace' the body of the visible cosmos as a whole.[9] This notion of a superior 'embracing' or 'comprehending' an inferior links with the notion of proceeding from universal to particular causes and entities. Still, the arrangement which perhaps gives a greater insight into Proclus and the Neo-Platonists is the second of the two possible arrangements of the 'spheres' of being. Here the corporeal part of existence becomes the 'oyster shell' (Plato's *Phaedrus*, 250), the most extended and separated part. As we shall see, for Proclus it corresponds to the Neo-Platonic definition of place as spatial extension, space. Unity, and the divine, now becomes the innermost part of existence, the centre. Away from this essential unity, existence becomes 'many'. However, desire (*orexis*, *ephesis*)[10] for the unified state is overwhelming because it is a more complete state. This phase of reintegration, from the 'many' to the 'one', is the 'reversion' (*epistrophê*).[11]

The levels of being are also levels of knowledge. Neo-Platonists, from Iamblichus onwards, adhered to the analytic rule that things are appropriated in respective modes. A perceiver, 'thinker' or 'knower' apprehends the object modally. The nature of the perceiver determines the mode (*tropos*). For example, gods and mortals may look at the same thing, but divines see it 'godly' and humans 'humanly'. So we have two objects, as it were, the object itself, and that appropriated in the perceiver's mode.[12] In this latter sense, perception is anti-realist. The knower directly knows what is appropriate to know, in the manner that the knower can know. As in the late Neo-Platonic metaphysics, so in the epistemology, objects are but modes. This is well illustrated in the passage below. Proclus adheres consistently to adverbial expressions, 'unifically', 'wholly', 'universally', 'figuratively' etc., which he is able to manage with Greek terms. However, rendering it in English becomes almost impossible, so a translator cannot avoid slipping into object-language: 'as one', 'as a whole', 'as a universal', 'as a shape' (A. C. Lloyd, *The Anatomy of Neoplatonism*, p. 154). What is fascinating is that this is exactly the conundrum faced by modern anti-realist theorists of perception, including the adverbial theorists. On the one hand, they try to avoid objects, entities and noun-language, because they are speculations beyond our immediate scope of perception, which often muddle our clear thinking. On the other, as their critics point out, it is extremely difficult to describe the content of perception without resorting to the vocabulary of objects. The later Neo-Platonists were better equipped to tackle the subject–object problem.

> For we cannot suppose that their cognitions (*gnôseis*) take on the character of the natures of their objects (*gnôstôn physesin*), any more than that which is not fixed (*araros*) is not left without fixation to the eyes of the gods, as the philosopher Porphyry said . . . Instead the mode of cognition (*gnôseos ho tropos*) becomes different according to the differences of the knowers. For the same thing a god apprehends unifically (*hênômenôs*), intellect wholly, reason universally [Lloyd: as a universal], imagination figuratively [Lloyd: as a shape], sensation sensitively [Lloyd: as an affection]. Because the object of knowledge is one, it does not follow that the knowledge of it is also single. (Proclus, *In Tim.*, 1.11.15–19)

3. THE CORPOREAL LEVEL

Proclus divides the inhabitants of the physical domain (entities with body and nature) into three broad groups: the terrestrial, the celestial and the in-between. Despite the typically Neo-Platonic tripartition, all three have ancient origins in Greek thought and culture. The metaphysical scale here coincides with cosmographical order, and he positions the inhabitants according to their degree of descent into gross matter.

'Down here' (*entautha*) on the earth-plane, entities come-to-be and pass away in a constant flux of 'generation' (*genesis*). Things move in ways and directions that are largely indeterminable. They are perceived piecemeal by different physical senses. Confusion and sensation dominate ordinary, 'sublunary' life.

Sublunary beings are perishable, because they are not ontologically complete in themselves. Inanimates break down. Inanimate objects include those that can be melted (in Greek scientific theory the metals are of the Water Element) and those that cannot, such as stones. They are simple corporeal entities that just have an 'image' of reality. However, even at the bottom of the metaphysical scale they carry an image, a symbol, or mark, of the divine. Living beings need food from outside to maintain their bodily integrity. They are distinguished by the kind of life they lead, and the powers they exercise (cf. Aristotle), which imply the appropriate modes of being. Human life is a mixture of 'immortal' (*athanatos*) and 'mortal' (*thnêtê*) modes. The immortal is the rational soul (*logikê psychê*) with its companion 'body' (Proclus' famous 'luminous', 'astral' vehicle; see later). The mortal is the irrational soul (*alogos*), that of pure nature, and its own 'pneumatic' vehicle. Proclus employs metallurgical, if not alchemical, phraseology in his description of the 'fusing' together (*syntêxis*) of the two.[13] Animals (*zôa*, *aloga*) lead only an irrational life: that is, they behave by sheer necessity alone, unlike humans, who have the freedom to follow their rational minds. Animals have minds equipped for simple cognition. Proclus classifies them into the traditional (Platonic) classes, the flying, aquatic and terrestrial.[14] Plants (*phyta*) partake solely of a simple 'image' of life.[15]

Many of these activities, notably thinking about thinking, do not associate with anything physical, and the phenomenon of life is itself distinct from body (living vs dead body). Living beings, and especially the rationally thinking humans, point to further, non-physical modes of existence. This was the conclusion of Platonism, which Aristotelians did not altogether contest.

Celestial bodies are well distinguished from terrestrial, because they appear to be imperishable, everlasting and determinate in their movement. Both Plato and Aristotle regarded the heavenly bodies as special. For Proclus, stars and planets are suitable examples of entities that are self-complete and independent. In this capacity, they can be regarded as causes affecting the externally dependent terrestrial domain. Some of this influence is overtly physical, for example the heat and light regulated by the sun (we see this 'astrology' even in Aristotle and Ptolemy). Others are more non-physical, the sympathy of the 'symbols' of the gods (examined in Proclus, *Hieratic Art*). Many cases are both physical and non-physical, for they are all levels under the same head. One example is the sunflower, which turns (both physically and metaphysically) towards the sun as its head-principle (*Hieratic Art*, 148.10). Proclus mentions that metals are formed as a result of solidification of emanations (*sympêknôsis*), or as a result of seeding (*phyetai*) by the celestial bodies.[16] Both theories (which also have an Aristotelian pedigree) were to become highly influential in the alchemy and astrology of the Middle Ages and the Renaissance.

Between the celestial objects and the terrestrial inhabitants, Proclus finds a niche for the so-called 'constant attendants' of the visible gods, which are the 'guardians' of their imperishable nature. Here he also puts the 'ennead of gods' mentioned by Plato (*Tim.*, 40e–41a).[17] He calls all these intermediaries *daimones*. Belief in such entities was widespread and uncontroversial. Socrates and Plato believed in them, and even Aristotle cited these 'superior' entities in his discussion of the rational faculties of humans. Most accepted the existence of intelligences superior to human. These were often referred to as 'our betters' (*kreittones*). Philosophers (e.g. Socrates) sometimes considered them as the immaterial 'genius', or 'character', which is in every human. The Neo-Platonists systematised these notions and, following Porphyry and Iamblichus, came to regard them as 'allotted powers' that convey divine influence and providence to earth.[18] Proclus classifies them according to their metaphysical function – to abide ('angels'), to proceed ('daimons proper') and to revert ('heroes').[19] This classification of spirits later became part of the Christian 'celestial hierarchy' of angels in the works of pseudo-Dionysius the Areopagite.

Proclus also distinguishes a class called 'uncontaminated' (*achrantoi*) and 'incorruptible' (*ou kakynomenoi*) souls. Unlike ordinary living beings, which die and descend all the way to Hades, these beings are perfect but choose to incarnate themselves on earth to help others. They seem to be 'occasional attendants of divinity' (*pote opadoi theôn*), and include special philosophers. These souls descend (*katiousa*) into generation, which means proper residence on earth. According to one interpretation, they are Proclus' Greek equivalent of the Indian avatars or bodhisattvas.[20]

So, some of the inhabitants of the physical world are irreversibly engulfed by the material constraints of the physical domain, others can lift themselves and recover fully their implicit levels of being. However (according to a theory owed to Iamblichus), only the self-constituted, independent ones can, by definition, actually do it by themselves without external aid. Humans may start to do it through philosophical contemplation but generally need guidance external to them to succeed.

Cause and effect in the physical domain

In the sublunary realm, all entities are in a continuous process of change (*metabolê*). Everything comes into being and then passes away, as opposed to the intelligible realm in which both the entities and their causal relations are timeless, unchanging and permanent. At the level of the material domain, causes and effects are no longer in a stable and eternal relationship but are mixed together (*miktos*, *symmiktos*) in a temporal and temporary state.[21] The incorporeal causes are embroiled in body and matter; soul herself acquires 'material garments'. The material of the bodies is likewise a mixture, and the Elements themselves are mixtures in a state of constant flux.[22] Matter is in a disorderly and mutable state of agitated motion (*plêmmeleia*, *ataktôs*). This is the 'gross' and 'unstable' matter (*pachytatê hylê*, *anedrastos*), which is a mere shadow of the stable matter as universal substrate, the 'receptacle of the universe' pervading through all the modes of existence.

Because of this state of constant change, every effect results from a 'concurrence' (*syndromê*) of several contributing causes acting on a suitable entity (*epitêdeios*) at the appropriate time (*kairos*) at the allotted place (*klêros*, *chôra*). An effect is due to many causes acting in consort. Each concurrence follows the general rule of sympathy, and the principle of 'fitness' or 'suitability' (*epitêdeiotês*). Things must be in close relation to each other, be in 'proportion' and 'symmetry' (*logos*, *symmetria*). For this to happen, they must have the appropriate disposition.[23]

Each independent entity has its own unique character (*idiôtês*) which is distributed among the dependents, the 'images' of it (see Chapter 2, section 6, on participation and self-sufficiency). So everything, however lowly in the hierarchy, is 'allotted' (*elachen*) an appropriate 'lot' (*klêros*) and 'signature' (*synthêma*) of the character distinguishing the independent entity (or property, since they are reified).

The place, the time and the disposed nature of the affected entity determine how the concurrence of many causes manifests. However, for Proclus, none of these factors is necessarily fixed. The allotment, even a divine one, may apply for a limited time-duration. It may apply to one place but not to another. More importantly, all these three factors, and the nature of the divine allotment itself, can be altered by those who have the knowledge of how to accomplish it.[24] Wise humans can direct them to their benefit by employing the knowledge of the levels of being (see section 10 below, on theurgy). That this can be possible at all stems from the principle that in the universe everything participates.

Body and Matter

All physical things, from stars to stones, have a body. Body (*sôma*) has a determinate existence. Body by itself, without physical qualities, is inert. It cannot move, or alter in shape and size, unless it is forced to do so by an external agent. It cannot generate itself, but can fall apart. In Proclus' scheme, Body is still a being (*on*), but does not merit being ranked as a reality. It is not self-substantiated, and what it does is subject to external forces. In the scale of metaphysical perfection and substantiation, Body ranks at the bottom (Proclus, *Plat. Theol.*, 3.20.9–14).

Proclus calls Body 'the substrate of ensouled existence' (*hypokeimenon tês psychôseos*).[25] This designation agrees with the notion of body as the 'material vehicle' (*hyliaion ochêma*) and the 'shell' of soul in Plato (*Phaedrus* 250), and with Aristotle's view of body and soul.

As a substrate, Body is closely allied to Matter, for Matter is 'the substrate of all things' (*hypokeimenon pantôn*). Nevertheless, there are differences between them in Proclus' hierarchy of existence. Body has matter and quantity in a certain form or shape. Matter has no determinate existence and is no being at all. For Proclus, pure Body is identical with shaped three-dimensional spatial extension, but pure Matter is power (*dynamis*) without its own definition or quality, except the readiness to be defined (which goes back to Aristotle). In this sense, Matter ranks even lower than Body. Unlike Plotinus, Proclus does not wish to distinguish between an intelligible and a sensible Matter, and insists that they are all one. He prefers to have sublunary matter as an aspect of this single, indefinite power extending through all the levels of being.[26] Proclus' metaphysical view of Matter will be discussed in more detail in section 9, on One, Matter and the inverse hierarchy.

Subtle bodies and soul-vehicles

That the soul has a subtle body (*lepton sôma*), which is its proper vehicle (*ochêma*), is one of the ideas for which Late Antiquity and Neo-Platonism are both famous and infamous.[27] In Christianity, the resurrected have a purified body, and the angels have bodies too. In occultism, from Renaissance to modern, there is talk of 'astral body' of the living and 'spirit' body of the dead. In parapsychology, there are reports of people experiencing their self detached from their physical body, but still with a body in which they are involved in remote sensing and near-death experiences. The notion of an aethereal-like body of the soul has a long history. It is entrenched in the belief not only that human identity survives death, but also that all vital functions are integrated. In other words, it is about spiritual and animal life.

In Greek philosophical thought, first traces of a 'first' body or vehicle of the soul appear in Galen's medical theory of the operation of a nervous system. The same theory surfaces later in the Middle Ages and the Renaissance, where it extends to cover both the sensory and the motor nervous systems. However, because soul was always more than just a vital, animating principle, her first body, or vehicle, was correspondingly more than just her organ during life. An inseparable, mortal life may have a similarly perishable body, but a separable, immortal life has an imperishable body. This is why we encounter two vehicles of the soul in Proclus.

Porphyry and Iamblichus were the ones who established the 'vehicle of the soul' in Neo-Platonic philosophy, but Proclus systematised the theory of vehicles. Indeed, the term 'astral' body-vehicle seems to be original to him and may not be found earlier.[28]

The soul acquires several bodies, of which the physical body is the last one. These bodies are its 'vehicles', each proper to each level of being that it acquires in its descent. So, according to Proclus, first comes the 'luminous' (*augoeides*), 'aethereal' (*aitherion*, *aitherôeides*), 'solar-like' (*hêlioeides*) and astral (*astrôeides*) vehicle. Then comes the 'spirituous', 'pneumatic' vehicle. Finally, the soul is incarnated in the fleshy body, the 'material' vehicle (*hyliaion ochêma*), its physical oyster-shell (*ostreôdon sôma*) and prison. For Neo-Platonists, plants have life but no soul, so they have no soul-vehicles (cf. Christian doctrine).

In a little more detail, the astral body is the 'first' and perpetual vehicle of the soul. Because of this direct relationship, Proclus calls it 'innate' (*symphyton*), an Aristotelian term. The grade of soul accompanied by such a vehicle is, of course, the immortal and rational (Proclus, *El. Th.*, prop. 196).

The soul, prompted by her own sense of daring (*tolmê*), descends from her intelligible heights towards the realm of generation following her momentum to incarnate. As she approaches her destination, she acquires increasingly material envelopes or mantles (*chitônes*) consisting of the four Elements.[29] These elemental envelopes constitute the spirit body or pneumatic vehicle. It is 'attached' (*prosphyton*) to soul, by contrast to the first, which is innate. More precisely, the pneumatic is not a vehicle of the pure soul, but of her descended mode, when she has attracted irrational faculties. This is the irrational (*alogos*) soul, which is subject to Necessity and mortality. When the pure soul realises her sorry state, she is overpowered by a yearning to return. During the ascent to her origins, the mortal soul and the associated pneumatic body are purged away and perish while the elemental envelopes are discarded in their respective spheres. The pneumatic body is thus 'perishable' (*phtharton*), although it survives death longer than the even more perishable earthly body.

Proclus tells us a lot about his theory of the two vehicles, but his accounts seem to take the reasons for granted. Nevertheless, we find them if we go to a *Commentary on Aristotle's De Anima* attributed to John Philoponus, but composed from the lectures of Ammonius, Proclus' student. The reasons refer to the pneumatic vehicle. Most of them go back to Porphyry, and may be traced even earlier to Middle Platonism.

First, the pneumatic body pervades the fleshy 'gross body', and supports the general vital and cognitive faculties. Here is the seat in which sensation, appetite and (re)cognition (*gnôstikê*) are not differentiated 'powers'. They are all integrated in the 'common sensorium' (from Aristotle, *De Anima* 3.1, *On Sleep* 2), which combines the diverse impressions into one unitary perception. But the common sensorium cannot be located in the biological body because such a body is complex and divided into parts.

Second, spontaneous growth can occur after the moment of death. Hair and nails continue to grow even after an animal is dead and the heart and other biological functions have ceased. So, the essence of vitality persists by being resident not in the dead material body, but in the pneumatic.

Third, discarnate souls that descend to the underworld must still have a body. Soul is in itself impervious to outside influence, so she must have a body to suffer the rewards of her former actions, and be purged. Further, phantoms, spirits and haunts must have some kind of body to be visible.

However, once the pneumatic vehicle is purged away, soul still needs to have a permanent body-vehicle. In Plato's *Timaeus*, body and soul mix intimately according to the Creator's plan. For Aristotle, soul is inseparable from body, and is the actualisation of the organism. Therefore an active soul must always be accompanied by some body, even a pure soul. Indeed, this is what Proclus himself delivers in his *Elements of Theology*, prop. 196. The kind of body fit for such a demanding career is a perfect and pure body like that of the stars: luminous, 'aethereal' and 'immaterial' (see Chapter 4 on space, Chapter 5 on celestial physics). Plato's *Timaeus* 41e was the classical source, where the Creator divides the number of souls equal to the number of stars and assigns each soul to a star 'as in a vehicle'. Eight centuries later, Proclus does refer to the 'first' body as the astral vehicle; but he does not mean literally a celestial body, but an astral-like body (*astrôeides*).

We may push the vehicle-theory further. Proclus tells us that the vehicles make the soul 'citizen of the cosmos'.[30] He alludes to Iamblichus' orthodox view that an individual soul falls wholly into a body (contra Plotinus, *Enn.* 4.8.8). With the vehicles, the soul becomes a citizen of the physical cosmos. The realm of space, time and body has various (sub)levels: that of pure space, the celestial, that of generation, etc. A soul can be naturalised at these different grades. So each soul acquires only those vehicle-bodies that are relevant to her destined incarnation. Humans are souls with luminous, pneumatic and fleshy bodies, but this is not the case for angels. Souls are as individual as the particular bodies in which they live.

Space and Time

In Greek thought, the concept of place, and its sibling but distinct concept of space, were associated with theories about matter as the receptacle-room and the substrate where change takes place. Time, on the other hand, was closely bound up with ideas on movement, continuity and the experience of events. Time relates to the dynamics of change, but place to the container where change happens, but which endures through change. So place had a somewhat inferior status with respect to time, especially when Plato defined time as the 'image of eternity'. The later Neo-Platonists made crucial contributions to the history of these ideas. First, they developed the theory that place is three-dimensional space and that of universal space. Second, they practically eliminated the difference in status between time and space. Third, they developed the distinction between archetypal and ordinary time.[31]

To summarise Proclus' innovative contribution (see further Chapter 4, section 6, Space, body and matter), he regards place as space-interval extended in three dimensions. Universal space is an immovable, indivisible, immaterial body. Proclus' notion of space as a body is grounded in his general metaphysics. Space is the intermediary between the active and organising principle of the cosmos (the Platonic world soul) and the inert body of the physical universe as a whole (the world-body). Between the immaterial and incorporeal state of being, on the one side, and the material and corporeal on the other, there is the 'immaterial body'.

Universal space is composed of and delineated by light (see Chapter 4, section 6, Space, body and matter). Universal space is the 'innate instrument' (*organon symphyes*) of the world soul. In other words, Space is the 'luminous', 'innate' body-vehicle of the active agent immanent in the world as a whole. Further, as an 'instrumental' cause (*organikon*) – one of the three 'accessory' classes of causes (see Chapter 2, section 7, on the six causes) – cosmic space imparts the appropriate 'portions' of space to the entities of the world. That is, physical things occupy their appointed, proper places so that there is no chaos in the world. Proclus' universal space is active, approximating Iamblichus' conception of place as power. Returning to Proclus' metaphysics of imparticipables and 'monads' (see Chapter 2, section 6, Participation), universal space almost qualifies as the originative 'monad' of the series of Place and Body. Nevertheless, there is no evidence that Proclus intended space for such a role, because cosmic space is active solely as the instrument and 'vehicle' of the world soul. Space is still a body, and does not possess a causal power of its own.[32] For the 'monad' of Body, we have to look to the monad of the physical domain.

Time, and its 'model' Eternity, appear unequivocally as a series fully following the metaphysical triadic scheme: imparticipable, participated and self-constituted, participated simply. This analysis is owed to Iamblichus, who distinguished imparticipable time from the participated. He also marked a fundamental break with Plotinus, for whom the sense of time results from the psychological activity of soul. For Iamblichus and later Neo-Platonists, such as Proclus, time is a substantial reality.

First, there is imparticipable time (*amethektos chronos*). This is indeed the 'monad' of time, the primary source for time as it is found in the world of sense-experience. It is a 'motionless', 'resting' time, because as the imparticipable aspect of time, it is exempt from time in which changes take place. By the metaphysics of 'procession', the imparticipable time is that which 'abides' in its own definition. By an Aristotelian reading, it may be called static (cf. Sorabji, *TCC*, p. 33ff.). But to a Neo-Platonist, it is prior to, and above, any notion of physical movement, including the polar designation stationary–mobile. Besides, remaining-proceeding-returning is primarily a non-phenomenal process.

Imparticipable time resides in the level of objective Intellect and specifically in the Creator (personified by the Olympian god, Zeus). Intellect is, similarly, beyond change. In Proclus' scheme, imparticipable time is placed in near-perfect position to vindicate Plato's definition of it as 'image of Eternity'. The Creator is the activity of Intellect, and the monad of Eternity is in the Paradigm, the activity of the Intelligible.[33] However, Proclus could have identified Time imparticipable with Kronos (which in his scheme personifies the essence of Intellect). From early antiquity, time, in Greek *chronos*, was sometimes identified with *Kronos*, Zeus' father. This substitution was believed to have been first used philosophically 1,000 years before Proclus, by one of Pythagoras' teachers, Pherekydes (sixth century BC). In Late Antiquity, it was adopted widely and became well established. Proclus does not seem to be committed to it.[34] The most likely reason is that as a Platonist he shows his support for Plato's derivation of the name 'Kronos' as '*koros nous*' in the sense of pure intellect (*Cratylus* 396b): what the essence of Intellect is. At any rate, the origin of Time itself antecedes Soul. Soul is the first level of being to partake of Time, and in her capacity as the principle of self-motion she actualises time in the physical world. While soul's essence is eternal (*ousia aiônios*), her activity, energy, is within time (*energeia kata chronon*).[35]

> If something partakes of soul, it also partakes of time, but not conversely (*ouk anapalin*); for those beings without soul (*apsycha*) participate in time, too; therefore time is placed over and above soul (*chronon epekeina psychês*). (Proclus, *In Tim.*, 3.32.27–30)

The transition from imparticipable time to that in participation (*en methexei chronou*), as is experienced in the physical domain, brings about a radical shift. The 'monad' contains the whole of physical time without any temporal intervals between the instances of time. Physical time is suspended, as it were, in a timeless dimension. Yet this timeless suspension contains all the sequences of events that will 'unfold' once time becomes flowing. Monadic time encompasses what will constitute past, present and future. The source of time functions as the repository of time, where all events and causal chains are complete, held, as it were, in a perfect tense. In passing from imparticipable to participated time, we pass from metaphysical relations to empirical. Causal connexions between beings and between grades of being come to be seen in temporal sequences, and our time-bound language makes us associate and confuse temporal history with metaphysical priority.[36]

Participable time is always 'in motion', and 'flowing'. This corresponds to the proceeding, and returning, time. Proclus distinguishes participated time further into the 'perpetual time' (*aei, aidios chronos*) and the 'temporary', 'part of time' (*pote en merei chronou*): in other words, into the self-substantiated type of time, and the dependent, simple time.[37]

Physical time appears in two types: perpetual duration and finite timespan. The latter is the time proper to transient events and the limited lifespans of mortal creatures. The former is mainly the time proper to the celestial bodies, but is also the time proper to things that last perpetually only as whole groups, not as individuals; for example, the four Elements of generation.[38]

Proclus also differentiates between participated time as a whole and as parts.[39] This is aimed primarily at distinguishing kinds of perpetual time. It concerns divisions within self-substantiated time. The time of ordinary experience is finite, and is a part of time in any case. The participated but self-substantiated *parts* of time are the 'measures of time' (cf. Plato, *Tim.* 38c ff.). That is, they are the independent cosmic clocks of the physical domain. We depend for timekeeping on the movements of the celestial bodies. Their periods determine our years, seasons and days, the earth acting as a passive accessory. The sun and the moon are, of course, the most visible of the 'measures of time', but there are also the saturnian, venusian, etc., and, according to Proclus, those generated by the individual periods of the fixed stars.[40] On the other hand, the self-substantiated *whole* of encosmic time, universal time, is the total 'measure' of the world soul (Proclus, *El. Th.*, prop. 200).

Proclus here draws a fine but important distinction. The original time, the 'monad', is exempt from time-measure altogether. However, the first physical time-frame is the totality of measurable time. This universal but physical time complements the universal corporeal space in Proclus' philosophy. Both relate directly to the active cause and principle of motion of the world, the world soul. Both constitute an integral whole prior to the manifold of parts: Place and Space to places and spaces, and Time to times.[41] Moreover, both are essentially circular, without edges.[42] Universal space is spherical, a ball of light containing all the cosmos. Universal time is the greatest period.

4. NATURE

We now focus on *physis* itself, as a *hypostasis* and level of reality. In Greek philosophy, 'nature' denoted the concrete things but also their innate capacity to act in the way that they normally do. Since the concrete things that change naturally, without outside intervention, are principally the living ones, philosophers disputed over life (*psychê*) and *physis*. Plato made *psychê* the organising and moving principle of the cosmos, because he saw the world as rational and therefore possessing purposeful movement. For Plato, *physis* was something blind and irrational ruled by necessity (*anagkê*), not by reason. Aristotle made *physis* the principle of change of all material bodies, and limited *psychê* to animals and plants. To account for movement in general, he introduced the concept of 'natural motion': that even inanimate things, such as the four Elements, have their own innate tendency to move. Later, the Stoics maintained *physis* and made it a universal principle, the exemplar for human nature. They considered reason the best faculty by which to lead a 'natural' life, so they developed the concept of *logos*, rational principle. Universal nature implants *logoi* to individuals as 'seeds', hence the term 'seminal reason-principles' (*spermatikoi logoi*).

Proclus draws on this background: he uses the Stoic term 'seminal reason-principles' [43] and absorbs the Aristotelian usage when he refers to the physical qualities immanent in a body. So, for Proclus, *physis* covers all the physical attributes that characterise a body and inhere inseparably in it. Body in itself is completely inert, and has no power to act. That which makes physical things interact and have qualities, for example, be visible, hard, soft, bitter, sweet, etc., is their incorporeal *physis*. The incorporeal *physis* is the 'enmattered form' that defines the physical body. So, in Neo-Platonic terms, nature constitutes what is real about a physical body.

On the other hand, Platonists came to regard nature as a kind of lower soul. We may glean evidence for it in the *Timaeus* where the world soul turns both towards the intelligibles and to the sensibles. As a median, soul is concerned both with rational and with non-rational affairs.[44] Nature as a cosmic principle thus complements the world soul, and facilitates the completion and salvation of Body (this was substantially Plotinus' position, too).[45] Like Soul, Nature lies between Intellect and Body. Compare, for example, these two extracts:

> The universal Nature contains in one the reason-principles (*tous logous*) of the celestial and the sublunary entities, and distributes her own powers to the multitude of natures which are divided from herself and apportioned about bodies. (Proclus, *Plat. Theol.*, 3.8.15–18)
>
> The world soul possesses the principles (*logous*) and the hypostasising powers of all encosmic things, and has not only the intellective causes of man and horse and all other animals, but also all the portions of the world. (Proclus, *In Tim.*, 2.266.1–5)

Imparticipable Nature?

An immanenist view of Nature is really unsuited for an imparticipable principle. By Proclus' metaphysics, the imparticipable Nature, the 'monad', would have to be exempt from any link with body, and would have to be an independent reality. That is, the monadic Nature would be contrary to the definition and function of nature.

This problem, which has passed so far unnoticed,[46] is not found in Proclus' general description of the levels of being. In the second half of book six of the *Platonic Theology*, he gives an order of gods for a level following that of Soul. He calls them the 'absolute' (*apolytos*), that is, 'unfettered' by the physical world. They are 'both above and within the mundane world' (*hyperkosmios kai egkosmios*). Yet nowhere does he mention clearly that this corresponds to imparticipable Nature. Where he concedes to refer to this 'single' (*mia*), 'whole' (*holê*) Nature is in the corollary of the *Elements of Theology* proposition 21.

Nevertheless, from diverse pieces in the *Platonic Theology*, we can gather that there is such a thing as Nature unparticipated, peculiar as that may seem. For instance, one of these 'unfettered' gods is said to generate the 'life inseparable from body' (*achôristos sômatôs*): this is characteristic of Nature. Another is said to activate all the 'reason-principles of nature' (*physikoi logoi*). Elsewhere in book six he places Necessity with the 'unfettered' order, while earlier in book five he states that the Creator produces Body with the aid of Nature and Necessity: a roundabout way of identifying the 'absolute' class with Nature.[47] Proclus' other designations for this order betray the delicate relationship of imparticipable Nature with the corporeal world. According to one of them, it is literally touch and go: 'touching and not touching' (*haphê kai mê haphê*). However, as suitable to an imparticipable cause, it is decidedly 'above the visible heavens' (*hyperouranios*).

In the *Platonic Theology*, Proclus describes the structure of the 'unfettered' order according to the metaphysical analysis into essence – power – activity. Since they are reified, each of them has its own essence, power and activity. So, here there are three Fathers (essence/remaining), three Life-givers (power/procession) and three Elevators (activity/reversion). The last assist the 'unfettering', the liberation of souls from the physical realm. Here are personified Hermes, the 'supplier of philosophy', Aphrodite, 'the cause of erotic inspiration', and the musical Apollo, who attracts souls to harmony and light. Further, because this level of being is too close to the mutability and confusion of gross matter, Proclus assigns three Uncontaminated (*achrantoi*), Guardian entities, which preserve the metaphysical distinctions. Indeed, here he finds the niche proper to other Guardian-like principles, those of Necessity (*anagkê*) and Fate (*heimarmenê*).

Physical beings are subject to necessity and fate with respect to their nature and body. But with respect to their higher levels of being – soul, intellect, unity – they rise above, and are free to follow a better life. In every entity, each level of being has its appropriate mode of action:

> Necessity itself is entirely exempt from the mundane world, but by the last of her powers she imparts movement to the whole heaven . . . an orderly circulation from her own essence . . . She is not governing by force (*hôs bia*), nor by the obliteration of the self-moving capacity (*autokinêton*) of life . . . but by comprehending every thing in an intellectual fashion and by limiting the indefinite and ordering the inordinate . . . she is a guardian . . . nothing escapes the divine law. (Proclus, *Plat. Theol.*, 6.404–5 (Portus))

Proclus calls Necessity the 'divinity established before Fate'. She is the monad which gives rise to the three Fates, one for the past, one for the present and one for the future. They turn the 'spindle' and impart rotation to the heavens (Plato, *Rep.* X, 616ff.). However, the Fate of the past enjoys priority, for she also comprehends the present and future. This points to the metaphysical sense of the past.[48] Causal events are determined when they are completed. Being complete implies that they have happened. However, at this level, Time is not yet fully temporal (see section 3 above, on Space and Time). Metaphysical 'past' contains the temporal past, the present and the future.

Nature's Father principles are the 'creators' (plural) that are really getting their hands dirty with the construction of the material world (as opposed to the Creator of detached Intellect). We encounter here Hephaestus, the Greek god of metalworking. He is responsible for 'breathing into' the 'nature of bodies' (*physis sômatôn*), and he 'manufactures the encosmic seats of the gods'. This poetic description alludes to the creation of Body. The 'encosmic seats' are the divine celestial bodies. 'Breathing into' carries a double meaning. According to the one, he breathes the organising *physis* immanent in body; and according to the other, he imparts the spatial distension, the volume characteristic of bodies.[49]

Nature is the last of the incorporeal, active levels of being that produce the domain of the senses. The entities under Nature have bodies: a passive, inert property. Because Nature is the direct cause and definition of Body, I suggest that imparticipable Nature is not only the originating 'monad' of her own family of natures, but also that of bodies. It is certainly true that Proclus has no 'monad' of Body, viz. Body unparticipated: it would be absurd. The divine henads that are 'encosmic' are those of the celestial bodies and the world soul. Cosmic space is but a 'vehicle' of the world soul:

clearly not imparticipable. Anyway, Body in itself does not rank among the real, permanent causes. So the unaccountable 'absolute' order is that of Nature, and imparticipable Nature is the cause of both natures and bodies. From the perspective of the procession from the One to Many, it marks the stage when, after the successive particularisations and separations from the One, the forms have occupied their appropriate niches as 'seminal principles' and are given their final separation, the spatial. This is the definition of the visible universe, and its expansion into three dimensions. From this level and 'below' or 'after', all dynamic activity has to be actualised through intervals in time and space.

5. PSYCHE

Not content with mind–body dualism, Platonism developed a threefold division in which *psychê* is a substance mediating between what is grasped purely by the senses and what is grasped purely by thought.[50] It is the principle of self-motion and life. *Psychê* cannot die or perish, for this would contradict its definition, so individual souls 'transmigrate' from body to body. In later Plato, the rational faculty of *psychê* has mathematicals as its objects. Post-Aristotelian Platonists pointed out that *psychê* must be distinguished from perfect intellect (*nous*). *Psychê* reasons but understands reality through argument, and does not grasp it at once and complete. Further, *psychê* is what defines a living being, and so it must be particular to this or that human or animal.[51] So, *psychê* exercises a wide range of activities but does them all from a partial perspective. Although the typical translation is 'soul', we may translate *psychê* in some contexts as 'life' and in others as 'personal mind': 'personal' in that it is particular to a sentient being, and 'mind' in that it covers subjective events commonly described as mental, and is associated with a physical body.

Both soul and nature are in the 'partible' grades (*merikos*, *meristos*). Souls and natures come to reside in particular bodies. This puts them at the very centre of the epistemological quandary. All that is known with the physical senses, referred to with language, accounted for with argument and understood through analytical parts, is essentially subjective. Proclus makes it plain that intuitive intellect (*nous*) is 'universal' and objective. As Proclus phrases it, 'the group of the directive divinities is arranged wholly in the partible orders' (*Plat. Theol.*, 6.349 (Portus)).

Soul is the organising form of body, and functions through it (Aristotle). However, Soul is a distinct hypostasis (Plotinus) – for Proclus, every soul is 'self-substantiated' (*authypostatos*). Further, soul contains the 'directive' faculty (*hêgêmonikon*) (Stoicism). Above all, soul is the Platonic principle of self-motion (*autokinêtos archê*), on which all physical kinds of motion depend, and the level of reality that is a close image of intellect.[52]

Soul is the essence of self-moving beings with individual identity: celestial bodies, angels, humans, animals (plants have only a general life (*zôê*), not soul). The kind of life (*bios*) that they lead depends on where their *psychê* inclines, and what activity it pursues. Such 'where', as Porphyry had noted (*Sentences* 33–8, 42), has no physical reference. Soul is incorporeal and is not located in a place or in a part of the body. 'Where' refers to a metaphysical level. If soul is engrossed with material affairs, then the whole person suffers the fate fit for gross material things, namely confusion, decadence, lack of satisfaction.

In this psychological, not biological, sense, Proclus accepts Plato's remark (*Tim.* 42bc) that bad humans may reincarnate in beasts. As Proclus explains, rational souls do not reincarnate in the bodies of beasts, 'for the nature of a wild beast is not the body of a beast, but the life of the beast'.[53] To make it more commonsensical, when in common parlance we may exclaim 'you are a pig!', we do not mean that such persons are physically pigs, but that they have the character and manners of a pig. Proclus goes on to clarify that it is the kind of life (*bios*) which one leads that matters. Brutal, unjust people are, in this respect, wolves, the timid are deer (*elaphoi*), and gluttons are asses (*onoi*). On the other hand, if soul focuses on the higher, perfect principles, the person enjoys the emancipation proper to those levels, such as well-being and serenity. Moreover, such souls keep to levels that maintain their nature. Consequently, such persons keep their definitions, their self-identity. They enjoy 'salvation' (*sôtêria*), and eventually become 'like unto God': the traditional aim of the Platonic school.

Personal mind and discursive thinking

To see more clearly the dependence of *psychê* on higher realities, we turn to its role as personal mind. Later Neo-Platonists applied the principle 'all in all but appropriately' to the theory of knowledge. A knower – more precisely 'that which cognises' or 'apprehends' (*gignôskôn*), a perceiver in the broad sense – is immediately aware of an object owed to the mode (*tropos*) appropriate to its nature; for example, divinity apprehends 'divinely' and humans 'humanly'. Entities are analysed into their levels of being, each possessing its appropriate cognitive state. Divinity is a pure unity, but humans are composed of physical body, soul, etc. Therefore a human can apprehend things in several modes, each according to its constituent level of being. So we can now concentrate on the ways in which *psychê* apprehends things. Neo-Platonists suggest that it works with 'presentations' (*phantasiai*): as Proclus puts it, images projected as onto a screen.[54] In personal mind, we see things as pictures.

Psychê can receive inputs from the physical and non-physical domains. It operates on several internal levels: in more traditional Greek philosophical terms, it has several cognitive states for different sources of knowledge (as divided by Plato in *Republic* 509–13). From the physical domain, personal mind receives sense-impressions (*aisthêseis*), called technically 'affections' (*pathê*). For Neo-Platonists, the different sense-impressions from the different sensory organs gather at the soul-vehicle (see section 3, on subtle bodies), where they are put together into one. Personal mind perceives this, and forms an image-picture of it with its 'imagination' (*phantasia*). When, for example, we stare at the sun, we come to form an image of it in our minds as a brilliant light in the sky, the size of a coin at arm's length. However, *psychê* also forms images from non-physical sources. Reasoning (*logos*) presents its own images. It is hard to see how this would work for abstracts like justice and honour. But in the earlier example, science tells us that the sun is the biggest body in our solar system. So we have two image-presentations of the same object: something tiny and something gigantic. What happens is that what is arrived at by reasoning 'corrects' the sensory.

Even the most primitive mind can form an opinion (*doxa*) based on sensory perception and presentation. It takes more to arrive at a reasoned piece of knowledge, which can count as understanding. Personal mind arrives at understanding by engaging in a mental discourse, thinking things through argumentation, weighing of bits of evidence, studying abstracts and relations, reflecting, etc. Greek philosophers called it 'discursive thinking' (*dianoia*). Indeed, understanding itself is *dianoia*, for we become acquainted not only with something but also with the reasons for it. This was Aristotle's view of precise knowledge (*epistêmê*), or science, which Proclus continued to uphold. In the above example, knowing that the big sun appears small because it is far away gives us a more precise knowledge (*epistêmê*) and understanding of the reasons for our immediate empirical evidence.

Psychê apprehends things as discursive concepts (*dianoêmata*; hence the rendition 'personal mind' fits best). In essence it is 'eternal', that is, timeless. Concepts can subsist in personal mind without the limitations imposed by physical dimension. However, concepts cannot be actualised, actuated, completely at once, because soul's activity is in time and place. *Psychê* 'projects' its contents itemised and extended. According to Neo-Platonic analysis, *psychê*, being a 'particulate' state, has to arrive at knowledge transitively piece-by-piece, moving mentally from premises to conclusions and from proposition to proposition, and stretching over time.

From where does subjective mind gets its concepts? According to the Platonic theory of knowledge, they cannot derive just by collecting lots of cases and then abstracting general concepts from them (*a posteriori* universals). For Proclus, *psychê* is a thinking substance, so it must have its own. Does this mean that personal mind creates all its concepts? No, because it would mean that we live in a state of complete subjectivity, where all our thoughts, whether 'fertile eggs' or 'full of air' (*anemiaia*),[55] would be equally valid. Science and knowledge would collapse into private psychology.

> Below every intellective substance, in souls (personal minds) that are always thinking (*aei noousais*), there are thoughts (*noêmata*) and objects of thought (*noêta*) distinct from each other, in the sense that the one is thinking and the other is being thought of. Thoughts are transitive (*noêseôn metabatikôn*), while the essential reason-principles inherent in them always remain in them. In individual souls (*merikais psychais*), thoughts are of two types: thoughts of essential reason-principles, and thoughts resulting from collecting (*synairoumenôn*) many sense-impressions by means of reasoning ... Those thoughts that are called projections of the essential reason-principles, by virtue of which we understand how soul is in a way a fullness of all Forms (*plêrôma tôn eidôn*), they must be understood as 'thoughts' in a different sense (*heteron tropon*) from those that spring up in soul through the projection of many sense-objects. (Proclus, *In Parm.*, 895.20–36; 896.1–6)

> Surely then, reasoning (*logismos*) is direct intellection divided up (*noêsis diêirêmenê*), which is looking at itself and seeking well-being in itself. For everyone who reasons moves from one position to another [*methistatai*: i.e., is transitive], and one who is reverting to oneself seeks the Good. (Proclus, *Plat. Th.*, 5.62.8–12)

To press home that personal mind has inherent concepts, Proclus proclaims (contrary to Aristotle and Locke) that *psychê* is never a *tabula rasa*, an empty writing-tablet. We have our own ideas and those inspired by an objective consciousness (later, Romantic poets and idealists would speak of 'inspiration' and the creative 'unconscious'). For this, he taps into an exegetical tradition of Aristotle's *De Anima* 429b30–430a1, where Aristotle pointed out that mind is potentially identical with the contents of thought but is actually a *tabula rasa* until it is thinking. According to the commentary on the *De Anima* attributed to John Philoponus (533.20–30), Iamblichus saw this as a ground of harmonising Aristotle and Plato on knowledge as recollection. Aristotle's metaphorical reference to a writing-tablet is sound because we write on the same tablet over and over again.[56] Our ideas in mind are like drafts on the writing-tablet. In this sense, 'unwritten' (*agraphon*) does not mean completely blank but written obscurely (*aphanês*) or badly (*kakographon*). Our mind is always active with thoughts, and the best ideas are inspired by higher realities.

> The *psychê* was never a writing-tablet empty of inscriptions (*logôn*), but has always been written and is always writing itself and is being written on by intellect (*nous*). For the *psychê* is also intellect, unfolding itself in accordance to its prior intellect, having been generated an image of it and external replica (*typos*). If, therefore, intellect has everything in an intellective way, *psychê* has everything psychically, and if the intellect has them in the manner of patterns, *psychê* has them as copies, and if intellect has them collectively (*synêirêmenôs*: as simultaneous total), the *psychê* has them dividedly (*diêirêmenôs*: as separate propositions). (Proclus, *In Eucl.*, 16.8–15)
>
> Our purification (*katharsis*) does not accrue naturally from outside, but is set in motion from within the *psychê* itself. For all evil (*pan kakon*) is external and introduced from outside the soul, but the good (*agathon*) is internal; for by nature soul is good-like (*agathoeidês*). And the more it becomes perfect, the more it recovers the self-moved life, which has become moved from outside (*heterokinêtos*) through its association with bodies and sympathy to them. Because of this, everything that the soul receives from outside remains outside it, just as the objects of presentation and sense-perception, and within it are only those things, such as the ones activated by itself to itself [i.e. the mind's own concepts] and the ones projected by itself. So it is purified by itself, since its reason-principle (*logos*) starts from itself and terminates in itself. (Proclus, *In Alc.*, 280.2–15)

Sentient beings can reason and arrive at an understanding, take moral actions and move volitionally, because of their personal *psychê*. *Psychê* is not a passive repository of sensible and intelligible states but an active integrator operating according to the rule 'all in all but appropriately'. The physical senses and the non-discursive intellect may perceive their respective objects directly, but personal mind tries to formulate a discursive account for them. For this, *psychê* uses its appropriate mode, which conditions the received information. Accordingly, all the complicated Neo-Platonic attributions ascribed, for example, to imparticipable Nature, Soul, Intellect, and beyond, are no more than inferences and best guesses, not identity statements of the objects themselves. By this, Proclus shows that he is not a naïve realist but is fully aware of the conditioning of knowledge (see also Chapter 5).

World soul

For Plato, the whole world has a *psychê* because it moves spontaneously in an organised, rational manner. Aristotle rejected both the notion of a soul for the cosmos and the need for a single principle for the world as a whole. The Stoics and the Middle Platonists, however, kept the concept of a soul for the world. It was confirmed by Plotinus, who made it responsible for the sensible world and its sympathy with the intelligibles.[57]

Proclus broadly follows Plotinus. However, for Proclus, the world soul is but the first of the participated members of the family of souls. Therefore the 'soul of the universe' (*hê tou pantos psychê*) is an 'encosmic soul' (*hê egkosmios psychê*), that is, immanent in-the-mundane-world. Although it is singular and universal, it is still embroiled with a body, but points to a 'supracosmic', imparticipable Soul. The world soul is the ambassador of the 'monad' in the world, so that Soul can operate within time and space. Designations such as 'one soul' (*mia psychê*) and 'whole soul' (*holê psychê*) may refer to either: a reader can tell them apart if there is an adjacent reference to circular, periodic motion, a sure guide to the world soul, since imparticipable causes are exempt from movement.[58]

According to the twofold path of participation (see Chapter 2, section 6, Participation), the world soul acquires intellective properties from its own world intellect. However, it acquires the soul-stuff from the imparticipable Soul. In turn, Soul inherits the dynamic quality from still higher causes, the power of Intellect and the Power, or Life itself. Consequently, the world soul has form-making and dynamic properties, which it actualises in the world body, the universe extended in space and time.[59] By this reasoning, world soul ought to have a world nature as its intermediary to the world body. Proclus' chief source for the structure of the world soul is the account in Plato's *Timaeus* (34b–37c). The world soul is composed of Sameness and Otherness. Their 'harmony' is the blending of the intellect-oriented with the nature-oriented. Plato devotes many sections to a complicated exposition of the Greek diatonic musical scale.[60] The 'numbers' are those that form the numerical proportions associated with the scale. This music of the spheres is the strongest evidence of

Pythagorean ideas in Plato. The Neo-Platonic mathematical syllabus was intended to contribute to the awakening of the fallen human soul as to her true origins.

The 'figure' of the world soul is the shape of X, the crossing of the bands of Sameness and Otherness. In geocentric astronomy, these bands are the equatorial and ecliptic circles of the celestial sphere, which meet at an angle (approximately 23.5 degrees of arc). So the X shape represents the daily and annual movement of the heavens. In astrology, the former refers to the 'houses' and the latter to the 'signs' of the zodiac. In Late Antiquity, and under the influence of the 'Chaldaeans', the metaphysical symbolism of the Timaean X was cultivated in a variety of forms until it assumed a magical, practically talismanic, status as it was coupled with the rich symbolism of the cross, +. Proclus tells us that the X was 'placed at the heart' (*enkardion entheis*) of every soul (heart the seat of soul) as an image of the world soul.[61] Is this a non-Christian crossing of the heart?

Another figure that depicted the combined effect of the two types of regular heavenly motion (especially that of the planets; see Chapter 5) was the helix, the spiral. For Proclus, it results from tracing a point that follows simultaneously two movements on different planes. A helix results from a combination of movements along curved and straight planes, but also along two circular planes. This is the theory of dynamic geometry, the geometry of the moving point, *locus*. It is one of Proclus' great contributions to mathematics, and Copernicus acknowledges him for it. The spiral had also a prestigious role as a religious and metaphysical symbol, although it does not relate to the world soul directly but to Time. The helix was the prime symbol of Aeon, Time personified, one chief deity of Mithraism. Proclus was well acquainted with both the scientific and the symbolical sides. For him the one reinforces the other: Time as a deity is fittingly expressed in the geometry of the motion of the planets as the measures of Time.[62] As in Plato's Pythagoreanism so in Neo-Platonism, mathematics embodies divinity.

Supracosmic Soul

Imparticipable Soul is examined in the first half of the *Platonic Theology*, book six. Its class is called 'directive' (*hêgêmonikê*), 'ruling' (*archikos*), 'assimilative' (*aphomoiômatikos*). On the one hand, the rational Soul directs and rules the Body. On the other, Soul links Body to Intellect (the intellective order) as a copy-image to paradigm. Soul is determined and rational because of Intellect, and Body becomes determined and intelligible through Soul. However, the imparticipable Soul is not associated with any body. Not to be confused with the world soul, which is also singular and whole, Proclus calls the imparticipable 'monad' by its own unambiguous title (late Neo-Platonic in origin): 'supracosmic' (*hyperkosmios*), meaning literally 'that which is above-the-mundane-world'.

> The supracosmic class are substantiated around the intellective divinities and according to intellective paradigms, for being divided into parts they assimilate entirely the entities posterior to the intellective, to them. (Proclus, *Plat. Theol.*, 5.48.23–7)

> The order of the directive divinities divides that which is united in the Creative Intellect, expands that which is whole in the activity (*energeia*) of the intellective divinities, and brings into diversity the simplicity of their providence. (Proclus, *Plat. Theol.*, 6.347 (Portus))

As in the structure of 'monadic' Nature, Proclus keeps the number of structure-members to about twelve grouped in four triads. The first group consists of three Father-class divinities (i.e. those special to essence/remaining). They are called the 'Three' 'Junior' 'Creators' (plural) (*treis*, *neoi*, *dêmiourgoi*) and the 'Three Kings', by virtue of kinship to the singular 'King', 'Creator', the activity of Intellect.[63] The classical source for these titles is mainly Plato's *Timaeus*. The second is the 'Life-giving Triad' (*zôogonos trias*). These are the Mother-class divine henads, who are special to power/procession (personified in the Coric female gods, e.g. Artemis, Persephone). The third is the 'Elevating' or 'Returning' class (encapsulated by the perfecting Apollo), and the fourth is the 'Uncontaminated' (*achrantoi*) (the Corybantes), which belong to the Guardian series.

The three Fathers and Creators represent aspects of the Father Creator on a level closer to the physical world, according to the metaphysical rule that everything exists in an appropriate mode. That the Father Craftsman delegated the work of creating the world as particulars to 'Junior' Creators (Zeus, Poseidon, Pluto) derives from Plato's *Timaeus* (Proclus, *Plat. Theol.*, 6.367–8 (Portus)).

The member-entity of imparticipable Soul who exhibits the exalting property of the Creator is the 'elevating' (*anagôgos*), identified with the Greek god Apollo; the triad consists merely of three of his attributes. He belongs, appropriately, to the Solar (*hêliakê*) series whose common characteristic is Light (*phôs*), each member manifesting and emanating the mode appropriate to its level of being. The Solar chain commences with the One, the purest and invisible form of light, and ends with the sun, the visible light that is proper to the world of the senses. One other member is the Creator himself. Many of his qualities pass on through this Solar chain to the elevating aspect of Soul, and so it can act as both an 'efficient' and a 'returning' cause (although the 'elevating' is not strictly speaking a 'creator'):

> [Plato] designates the whole triad Apollonic . . . through the one of the three he [Apollo] participates in unpolluted light and intelligible harmony . . . the other two being the creative dyad, called 'hands' [of Apollo], which are efficient (*drastêrious*) and motive (*kinêtikas*) and creative causes. (Proclus, *Plat. Theol.*, 6.376–81 (Portus))

From the perspective of the procession from the One, Soul establishes the creation of the particularised universe. Soul contains the principle of 'dissimilarity' (*anomoiotês*),[64] so the 'forms' separate. Nevertheless, Proclus makes Soul the mode of being proper to cosmic sympathy and communion (*koinônia*). Soul is also the principle of motion, which later in the metaphysical procession will manifest as phenomenal, physical change in time and place. Soul expresses its ceaseless activity within Time.

> This order of divinities is especially presiding over the sympathy of the world (*sympatheia kosmou*) and mutual communion . . . all things are in each other and similarity is what brings them together (*synagôgos*). (Proclus, Plat. Theol., 6.351–2 (Portus))

6. INTELLECT

Intellect (*nous*) in Proclus' system presents two aspects. From the perspective of reversion (usually concerning epistemology), intellect is contemplative, conscious of the definitions of things in a direct, intuitive way. Speaking more loosely, the contemplative intellect is the intelligence of living beings by which they have an unmediated grasp of things; so even animals have a spark. From the perspective of the procession (usually concerning causation and cosmogony), intellect is creative. As the Neo-Platonists emphasise over and over again, this is not creation from nothing, but making (*poiêsis*) in the sense of supplying definition and 'form'.[65] On a cosmic scale, Intellect is God the Creator, who extends over all his creatures, alive or inanimate. According to the practice of shifting emphasis, or scope distinction,[66] the contemplative intellect is at the tail-end of the timeless, intelligible domain, but as creative it stands as the archetype of the sensible world.

In Greek philosophy, the Neo-Platonic view of the intellect has a long and intricate family tree, whose roots are in Plato's discussion of reason for the world in the *Timaeus* (29–41), *Philebus* (e.g. 28–30), *Statesman* (269–72), the *Letters* II and VII, and elsewhere, and in Aristotle's notion of an active reason and his philosophy of mind. An account belongs to more general histories of the later Academy, Middle Platonism and post-Aristotelian exegesis, especially that of Alexander of Aphrodisias.[67] It suffices to mention here that what distinguished the Neo-Platonic position was Plotinus' novel solution to the ancient problem of what and where are Plato's Forms. According to Porphyry, traditional Platonists like the Athenian Longinus (Porphyry's first teacher) adhered to the doctrine that the Forms, being objects of thought (*noêta*), reside outside intellect. Some Pythagorising Platonists, notably Numenius of Apamea, were drawn to a vigorous debate on how the same Intellect-God could deal with generation and keep so many Forms in mind. They proposed a hierarchical split into three divine Intellects: the self-absorbed Good (also called primal and Being itself; see Proclus on the intelligible), Intellect proper, and the Maker involved more directly with creation (the Soul?). According to Proclus (who seems to draw on Porphyry as intermediary source), they correctly recognised the difference between intellect as contemplative and as creative, but were wrong in splitting up God the Creator. Plotinus proposed that the Forms are in the Creator's Intellect, and that Intellect is identical with the Forms (for Aristotle, an active mind is identical with its objects of thought and can contain many intelligibles). Porphyry intimates to us (*Life of Plotinus* 18) that it took three gruelling tries before he understood it.

Iamblichus went on to distinguish between the level proper to object of thought and that to intellect: in (Neo-)Platonic jargon, between the 'intelligible' (*noêton*) and the 'intellective' (*noeron*). In this respect, he returned to a more traditional Platonic rendering. Nevertheless, following the Plotinian example, he proposed an intelligible intellect, which contains Forms proper. This is distinct from the intellective intellect, or intellect proper, which is the Platonic Creator, who distributes the Forms. In this hierarchical division, Iamblichus is closer to Numenius (three Gods), and to Amelius (who proposed three Creators, including Soul). Amelius was Plotinus' chief follower who settled at Apamea, the place where previously Numenius taught, and later Iamblichus.

Divine Intellect

Proclus describes the monadic Intellect in book 5 of the *Platonic Theology*. Its general properties spring from the creative and contemplative aspects:

> The intellective divinities proceed from all the divinities prior to them, receiving union (*henôseis*) from the One . . . but essence (*ousiais*) from the intelligibles; they are allotted an all-perfect, connective and generative life from those which are intelligible and intellective, but the intellective property itself (*idiotês*) they have by themselves. They cause all the particulated orders (i.e. souls, natures, bodies) to revert to them but are established in the intelligibles . . . they are neither diminished by their procession, nor do they receive anything additional from their generation (*apogennêsin*) (Proclus, *Plat. Theol.*, 5.7.12–24)

The structure of imparticipable Intellect is not strictly triadic. 'The intellective divinities constitute a heptad (*hebdomas*)' (*Plat. Theol.*, 5 ch. 2). Proclus derives it from the Pythagorean number-symbolism which associated the number seven with intellect.[68] However, Proclus' reasons may be purely practical. The triadic division is supposed to grow geometrically from the One to Many (henad has 3 implicit; being = 3 × 3; life = 3 × 3 × 3, etc). Nevertheless, he adapts the sevenfold scheme into a triadic, that is, two threesomes and one singularity.[69] This sufficiently underlines the special position of the Intellect with respect to the physical world. The second triad and the singularity are there to preserve the immutability and distinctness of the Creator and the Forms.

The first triad is composed of three 'Fathers'. They preside over the essence, power and the activity of Intellect. Proclus renews their traditional personifications with Kronos, Rhea and Zeus, the three chief gods of the Greek pantheon, although he also associates them with Chaldaean deities. The second triad is composed of the 'uncontaminated' (*achrantoi*) entities, which belong to the Guardian class, guarding each Father individually. This fits with the differentiation found at this level, and the beginnings of involvement with the world of matter. The singularity is the principle of differentiation itself. Prior to differentiation as an attribute, as is found in souls, natures, bodies, time, space and discursive thinking, there is in itself the 'dividing monad' (*diairetikê monas*), the 'difference', or otherness (*heterotês*), and the 'source of distinction' (*diakriseôs pêgê*). Further, in cosmogonical terms, there is the formal origin of the extension of the universe in time and space, and its dispersion and division into different 'forms'.

Of the three 'Father' deities, the first functions 'according to the intelligible . . . abiding and remaining in himself'. In other words, it is the essence of the 'intellective' Intellect, which is most like the Essence itself, the 'intelligible'. As the essence, it is the pure Intellect, which is engaged with contemplation of its source in the still higher intelligibles. He carries all the properties attributed to Kronos by Plato in the *Cratylus* (396), but he also seems to be identified with Aristotle's supreme *Nous*, for Kronos belongs to the order of the 'desirable' (*epheton*). Kronos 'is an unmixed intellect (*akêraton noun*) . . . pure, immaterial and perfect (*teleios*), established in the order of the desirable above the creation (*dêmiourgias*)' (*Plat. Theol.*, 5 ch. 5). This would mean that later Neo-Platonists distinguished between the divine Intellect according to Aristotle's *Metaphysics* and to Plato's *Timaeus*, and placed the former over the latter.

The second deity is actually a Mother ('Father' in that it produces timeless wholes, 'Mother' in that it presides over 'procession'). She functions 'according to life . . . proceeding and vivifying all things'. She represents the prolific diversity about to be unleashed in the creation of the world, the power which imparts movement to the world through soul, the principle of motion most proximate to body. Proclus identifies this powerful causal entity, who is superior to the Creator himself, with the female principle of the universe. She is the Mother of the Creator, out of whose womb were born both he and the world. She is the goddess Rhea as 'flux' (in Greek, *rhoê*: see Plato, *Crat.* 402).[70] Her Chaldaean associations are abundant, for she is clearly the Great Mother of the 'mysteries' of Cybele et al. She is so distinguished that in Proclus' references she is often styled simply 'the Goddess'.[71]

The third Father is the Demiurge of Plato's *Timaeus*. He functions 'according to intellect . . . glittering with creative works' (*Plat. Theol.*, 5.9.18–24). The third, being the intellect of Intellect and the activity of Intellect-in-act, exemplifies the qualities of this level of existence as a whole. He is the Father and Creator (*poiêtês*) of the world. Everything that exists under and posterior to him is his creature. He is the cause responsible for the entities which exist in Time. However, the Platonic Creator creates by appealing to a higher 'paradigm', pattern, which for Proclus lies at the highest intelligible level. His bond with the Paradigm and his creation of a rational, living cosmos makes him the 'intellective Living-Being' (*noêron zôon*). So, for Proclus, the Creator is not only the efficient (*poiêtikos*; literally 'making') cause but also the formal (*eidêtikos*), and final (*telikos*) cause of the temporal, physical world. With this radical attribution Proclus rejects the Aristotelians, for whom the prime Intellect is the final cause but is not an efficient one, and the Stoics, for whom the creative intellect is inseparable from matter.[72]

The Demiurge is not only a divine being but also contains in himself

> the intelligible and true being and has comprehended in advance (*proeilêphen*) the final cause (*telikon aition*) of the entities of the mundane world, and the paradigmatic causes. (Proclus, *Plat. Theol.*, 5.61.10–14)

Yet the Creator's involvement with physical things surely sullies him. Did not Aristotle avoid this by making the creative Intellect just a final cause? Indeed, by comparison to Proclus' essential Intellect (Kronos), Zeus the Creator seems to look downwards.

> Very properly therefore, this universe has two sorts of life, period and revolution, the one Kronian, the other Zeusian, as it is said in the *Statesman* Myth (Plato, *Polit.* 271f.). According to the one, it has all of nature's own goods, and life free of misery and weariness. But according to the other, it partakes of the material discordancy (*hylikês plêmmeleias*) and multi-changing nature. For life in the world is twofold, the one is concealed and unnoticed (*aphanous*) and more intellectual (*noerôteras*), and the other is more physical (*physikôteras*) and manifest (*emphanous*), and whereas the one is defined by Providence, the other, which proceeds in a disorderly fashion, is defined by Fate (*heimarmenên*). The second which is multiform and perfected through Nature is suspended from the Zeusian order (*diias exêrtêtai taxeôs*), but the first which is more simple, intellective and unnoticed is suspended from the Kronian. (Proclus, *Plat. Theol.*, 5.24.23–5.9)

These words echo strongly the Gnostic view of the Demiurge, who is close to the material world and is decidedly less than perfect, if not evil, and rules with Fate's compulsion. However, even in this quotation there is neither an expressed nor an implicit admittance that the Creator, or his physical creation, are in any way evil. Furthermore, there is no antagonism between God the Creator and the God of Good and Light. So Proclus' Neo-Platonism differs from the two fundamental tenets of Gnosticism. The other system of thought with which it does seem to have more in common is Hermeticism, in which the Creator is likewise not evil, but simply not perfect. But on closer examination, Proclus does not say that there is any imperfection, or discordance, resident in Zeus, the Creator. He says that there is in the 'series suspended' from him, that is, in the recipients of the material world. This is, of course, entirely consistent with his metaphysics of participation: the principle, monad, stays 'abiding' pure, but what 'processes' from it and engages in participation becomes conditioned by it. Therefore, even in this respect, we must distinguish

Proclus' Neo-Platonism from Hermeticism, and both must certainly be set apart from Gnosticism.[73]

By comparison to the physical realm itself, the Demiurge is very much the glorious being that befits his station. He is the 'king of the universe' (*basileus pantos*) (from Plato, *Letter* II), bathed in and transmitting the light from the One, and kindling the sun with it; hence his title 'source of the sun' (*pêgaios hêlios*). In this respect, Proclus' system of the celestial bodies is heliocentric.

> He especially substantiates the whole sun (*to holon hêlion*), kindling its light from his own intellective essence so that it may have a transcending pre-eminence over the others (the other planets). (Proclus, *Plat. Theol.*, 5.74.7–9)

The Creator does not become sullied by his creation. Intellects create not by getting their hands dirty but because creation is a consequence of thinking,[74] as procession emanates spontaneously from the One. The Creator's causal procession takes place in three broad phases. First he produces participable properties of the same kind as him, viz. the intellects, ideas and Forms. Second, he produces subsidiary levels of being, which are substantively different: Soul, Nature and Body. These he produces with contributory causes.

> The Demiurge produces the world intellect (*noun tou pantos*) from himself and his very own substance . . . first he generates from himself the intellective and indivisible classes [i.e. the intellects and Forms] . . .
>
> In conjunction with the Mixing Bowl [*kratêros*; Plato, *Tim.* 41, *Chald. Or.* fr. 42] he substantiates the psychical class . . . he actualises the soul, which he sets in order (*diakosmôn*) prior to body . . . from this Mixing Bowl is substantiated the world soul, and the second and third classes of partible souls . . . He creates (*dêmiourgei*) all the celestial, daimonic and sublunary classes . . . he substantiates the vehicles associated with souls, and divides the partible souls around their leading divinity . . . and unfolds to them the laws of Fate . . .
>
> In conjunction with the whole Nature (*holês physeôs*) he substantiates the corporeal class . . . in conjunction with Necessity (*anagkês*), he moulds (*plattôn*) the world body (*sôma tou pantos*) and draws the figure of the heavens . . . produces the generation of bodies together with that of the whole Nature and mixes the partible classes in the primal Nature. (Proclus, *Plat. Theol.*, 5.113.15, 9; 114.27; 5.74.19, 10; 114.5)

As we saw earlier, this is not a creation occurring in time, nor is it from nothing. It is 'setting in order' by imparting of determinate form: a fashioning by copying onto a suitable recipient the eternal Forms of the intelligible Model, the Paradigm (developed from Plato's *Timaeus*). For Proclus, standing in the Greek philosophical tradition, this is a timeless process, since the appearance of time is part of the act of creation. So, although the vocabulary overlaps the Judaeo-Christian, the Neo-Platonic conception differs radically from the religious doctrine of *genesis* and *apocalypsis* as Beginning and End Times. Proclus even wrote a treatise on this aimed specifically against Christians.[75] In return, the Neo-Platonic-trained, but Christian, John Philoponus later (sixth century) wrote a point-by-point refutation of him. For Proclus, time is not a measure external to the created universe but is intrinsic to its very fabric and created simultaneously with it.

> The Demiurge generates from himself the whole of Time by imitation of Eternity and also all the measures of time, as well as the divinities which make these measures manifest [*ekphainontas*; i.e. the celestial bodies as cosmic clocks]. (Proclus, *Plat. Theol.*, 5.74.4–7)

Analysis of thought and non-discursive thinking (I)

Non-discursive thought (*nous*) in Neo-Platonism is usually studied in Plotinus. This misses the important differences in Proclus. The Athenian School took the Iamblichean analysis of *nous* further. Proclus distinguishes three senses of non-discursive thought. There is the intellect thinking of itself in the act of thinking (the thinker), intellect having as its object the process of thinking, and intellect having a substantial object of thought. So there are three levels, each with its appropriate intellect and thoughts. Intellect in the act of thinking is the level proper to Intellect itself, the 'intellective' (*noeron*). Intellect absorbed solely with the essence of its object is at the level proper to the object of thought, the 'intelligible' (*noêton*). The process of thinking falls between the thinker and its object and so is 'intellective as well as intelligible' (*noeron hama kai noêton*). Primal, 'intelligible' intellect is higher than Intellect as thinker, which is the 'intellective' one we are considering here.

> Every intellect contemplates directly itself (*nous heauton noei*); but the primal intellect contemplates itself only, and intellect and its object are numerically one. Each subsequent intellect contemplates simultaneously both itself and its priors, so that its object is itself

> and its source . . . If an intellect is object of thought (*nous noêtos*), in knowing itself, being object of thought, it knows the object of thought, which is itself. Every subsequent intellect simultaneously contemplates itself as an object and the prior object. Thus there is an object of thought (*noêton*: intelligible) in intellect, and an intellect in the intelligible. But the higher intellect is identical with its object (*tôi noêtôi ho autos*), whereas the lower is identical with its own content, but not with the higher intelligible; for the pure intelligible is distinct from the intelligible in the thinker. (Proclus, *El. Th.*, prop. 167)
>
> If the objects of thought are prior to the thinkers, there must also be another object of thought within them, because every thinker thinks itself, and everything that thinks itself thinks by means of its own thinking, not looking outside itself . . . For the object of thought has three senses, in participation at the level of the thinker who thinks those prior to it, in belonging substantively at the level of the thinker who thinks itself, and causally at the level of the thinker who thinks those posterior to it. (Proclus, *In Parm.*, 900.8–21)
>
> Every intellect in activity knows that it thinks (*noei*); for the character of thinking is not distinct from thinking that it thinks (*noein hoti noei*) . . . Seeing itself thinking and cognising itself seeing (that is thinking), it knows that it is an intellect in the act of thinking. Knowing this, it knows not just that it is thinking, but also what it is thinking. Therefore it simultaneously knows the object of thought, and that it thinks, and is being thought by itself as a thinker. (Proclus, *El. Th.*, prop. 168)
>
> Those who hold that thoughts (*noêseis*) are concurrent with the objects of thought, they also define thought as that of the thinker (*noountos*) and as a distinct entity (*ontos*), all three unified with each other, the thinker, the process of thought (*noêseos*) and the object of thought. And that is not to be wondered at, since in the case of objects of sense-perception they say that the process of perceiving (*aisthêsin*) is the same as the object perceived, calling both 'perception'. (Proclus, *In Parm.*, 899.17–23)

The difference between intellection and reasoning, between intellect and soul as personal mind, is that the former are not bound by time and concrete matters, nor are they subjective. They are concerned solely with timeless, fixed realities. Intellect is the means by which realities can be grasped directly in full. Proclus stresses that every intellect is in all respects non-temporal: in essence, power and activity (e.g. *El. Th.*, prop. 169) (soul is in essence timeless, but in activity temporal). Intellect conceives things simultaneously and as wholes. *Psychê* has to combine different ideas in a subjective mind, and exercise ratiocination. A reasoning mind rises above mere opinion or belief (*doxa*), and can arrive at precise knowledge (*epistêmê*). However, such science depends on the 'synthesing' power of mind, and on primary sources. As Aristotle himself accepted (*Nic. Eth.*, 6.6), first principles cannot be proved scientifically but are grasped directly with intellect. So, for Proclus, 'scientific knowledge (*epistêmonikê gnôsis*) is more synthetic than the projection of intellect, but intellect is the proper spectator of the Forms, because it is of the same nature as them' (*In Parm.*, 924.32–7). Intellection does not arrive at knowledge piecemeal, through a series of arguments and a mental to-and-fro. It gets at knowledge without mediation. For this reason, the Greek for 'intellection' (*nous*) is often translated as intuition. We can see just how this works in Proclus. He tells us that animals have no rational soul but an intellect in that they have cognition (*gnôsis*). In this context, animals do not have a personal mind as human beings do. They cannot reason and think things through, nor are they intelligent in the full sense. Nevertheless, animals can cognise, mentally capture objects. Animals are intellectual in that they intuit things directly. Thus, intellect and its thinking activity count as objective.

However, this raises two problems. Are all proper intellects the same? Does the non-discursive intellect cease to form propositions about what things are? The first problem arises from the implication that if intellects have complete knowledge of what there is, then there is nothing to differentiate them. Proclus answers with the aid of the 'all in all but appropriately' rule as applied to the imparticipable–participable distinction. Only the imparticipable, the monadic source of the intellective property, thinks 'simply' (*haplôs*), being unconditioned. Plural intellects are appropriated by individual souls/personal minds (cf. *El Th.*, prop. 170). Human intellects intuit humanly, angels angelically, and cats must intuit catly.

From his response to the first problem, we also get a clue about the second. At the intellective level, there is room for diversity. Intellects do not lose the ability to compose propositions about what things are, nor to conceive Forms in isolation. At the level proper to intellect-in-act, Forms both participate in each other and maintain their distinctness. Proclus stresses that the principle of distinction (*diakrisis*) characterises this level.[76] This means that Forms can be woven together (as in later Plato) to construct compound definitions. The Forms are not all of the same level but are on several intellect-levels, some more universal than others.[77]

Further, the intellective intellects are not absorbed solely with themselves. Even the imparticipable Intellect has several objects of thought. Here, thinker and object have not reached full identity.[78] As we saw earlier, intellect-in-act and intellect-in-essence are on different levels. As Proclus puts it, only the intelligible intellect has a single object of thought, its own essence. There, intellect and object join completely, and join in essence, not just in act or power. Interestingly, Proclus places there Truth as an unconditioned substantive. This means that at the levels under the intelligible, including the intellective, we have truth as an attribute, that is, 'true', which is the ingredient for forming propositions.

Finally, intellective Intellect covers at most all the creatures to which the Creator gives 'form'. Intellect knows things in general, fixed terms. It cannot know individuals within species, nor transient things such as dust-piles, nor artefacts, nor privations, such as evil, because for Proclus they have no Forms.[79] At best, it can acquaint them through a universal. On the other hand, intellects at higher levels extend to anything that can be said to exist, even to quantities and processes without fixed limits. Thus I note that Proclus entertains different grades of non-discursive intellection, some of which hold propositions while others do not.

Intellect marks the furthest level of reality that we can access with our mind. *Nous* is what substantiates the mental powers of *psychê*, and the two are intimately connected. Our reason (*logos*) has its source directly in *nous*. As Proclus puts it, soul has in extension that which intellect contains unextended (*In Parm.*, 898). What our intellect contemplates is objective, and what our soul conceives is subjective. Both enable us to grasp things with our faculties, describe them with our language and formulate them with propositions. As human beings, at best we have an intellect-in-act. According to the late Neo-Platonic analysis, such an intellect reaches as far it can by its definition: the intellective level. What is above it is beyond our intellect's grasp.

> The transcendent Forms exist by themselves (*kath' auta*); those that exist by themselves and of themselves are not in us; what are not in us are not coordinate (*systoicha*) with our knowledge (*epistêmên*); what are not coordinate with our level of knowledge are unknowable (*agnôsta*) to our knowledge; so, then, the transcendent Forms are unknowable by our knowledge; they are contemplated (*theata esti*) only by the divine Intellect. This is so for all the Forms, but especially for those that are beyond (*ep' ekeina*) the intellective gods; for neither sense-perception, nor knowledge based on opinion (*doxastikê*), nor pure reason (*logos*), nor our own intellective knowledge connects (*synaptei*) the *psychê* to those Forms, but only an

> illumination (*ellampsis*) from the intellective gods renders us capable of being connected to those intelligible-and-intellective Forms . . . And for this reason, indeed, Socrates in the *Phaedrus* (249d) . . . compares their contemplation (*theôrian*) to mystery-rites (*teletais*), initiations (*myêsesi*) and visions (*epopteias*), elevating our souls under the arch of Heaven, and to Heaven itself, and to the place above Heaven. (Proclus, *In Parm.*, 949.13–38)

7. LIFE

Life in this context means more than vitality. It covers multiplication, the lack of limit and discreteness, potency (*dynamis*) and process (*proodos*). In (Neo-)Platonic exegetical tradition, positing life among the eternals stems from Plato's *Sophist* and *Timaeus* 30d, where the paradigm for the universe is called an 'intelligible living being' and an 'all-perfect animal'. For Plotinus, too, the intelligibles must have life, otherwise Intellect would be inanimate. Further, in a late ancient anonymous commentary on Plato's *Parmenides*, which is controversially attributed to Porphyry, we find explicit reference to the threesome being–life–intellect, the seed for the rich intellect-structure typical of Iamblichus and later Neo-Platonism. In fact, the Athenian School proposed that Life merits its own distinct *hypostasis*, whose rank is the 'intelligible and simultaneously intellective'.[80]

The drawback of the exegetical history is that Proclus takes it for granted, and leaves the uninitiated reader to guess why, for example, this level should be beyond the grasp of human intellect. According to Proclus' general metaphysics (see Chapter 2, section 8, Power), before something manifests in activity, in a way that the senses or mind can grasp, it exists implicitly. Something that has happened presupposes that it could have happened. However, this does not mean that it exists weakly, as a potentiality which may or not become fulfilled. For the (Neo-)Platonist, *dynamis* has an active sense: the causal power. In this sense, potency is more generic and 'powerful' than actuality, for it contains all possibilities. Active power is capable and ready to be actualised. Active power is the efficacious ideal, but potentiality is what is on offer. Actualisation is the compromise of the two. For Proclus, this applies to timeless reality as much as it evidently does to the temporal. The difference is that, in the timeless, intelligible domain, all that is possible does actually occur. There is nothing to prevent logical necessity from becoming actualised. For Proclus, this state of logico-metaphysical potency is very important. The intellective level contains distinctions that are well separated, defined and just within grasp of our intellect. But this presupposes a level where there must be every possible reality. The Creator's Intellect can grasp it, but, since it is not yet actualised in Intellect, our mind cannot reach it unaided. Therefore this is the panorama (of Plato's *Phaedrus* Myth) which all minds strive to behold in their reversion, the journey to the full comprehension of origins. Indeed, Proclus sees it as the place proper to knowledge and science itself (*epistêmê*).[81]

From the perspective of cosmogony, this level is a dynamic process rather than a stabilised state of existence. Proclus identifies it with pure power (*dynamis*), procession (to emanate forth) and the motion of the intelligible heavens. In this sense, it is unlike its antecedent level, intelligible Being. There, everything abides in a prototypical matrix. It is also unlike the immediately subsequent mode, Intellect, where the products of the procession have settled into 'formal aggregates' (*eidêtikai periochai*). To borrow modern cosmological ideas, we may say that it constitutes the inflation of the universe, prior to its expansion in space and time.[82] At the level of Power (= Life), the incipient plurality in Being acquires a kind of movement and takes a shape and number, prior to creation by Intellect, and manifestation in physical space and time. Intelligible Being contains the universe in a holistic, 'hidden' (*kryphiôs*) mode; Life brings things 'into distinction' (*eis diakrisin*), 'exhibits' and 'deploys' them (*ekphainein, anaploun*). We are still in the domain of motionless motion. Nevertheless, Life is motion 'in a causal mode': the circulation of the intelligible Heaven. Soul is where motion belongs 'substantially'. Body has motion 'by participation', taking place within space and time.[83]

Imparticipable Life and Number

Proclus examines this level in book four of the *Platonic Theology*. For his account of the supra-intellectual status of this order, he appeals to Plato's *Phaedrus* Myth (the 'beholding' of heaven) and the *Cratylus*. For the theory that this level supports Number itself, he goes to the *Parmenides* 143–4. His account includes a refutation of Plotinus on number in Intellect, and concludes with a Neo-Platonic 'harmonisation' of the *Parmenides* with the *Chaldaean Oracles* (especially on the division of the universe).[84]

The self-substantiated *henads* characteristic of Life are the 'intelligible and at the same time intellective' (*noêton hama kai noêron*). Proclus designates them 'connective' and 'gathering together' (*synektikos, synochikê, synagôgos*), for this level links Intellect with its object, the intelligible Being.[85] In other words, this order exemplifies intellection as a process (*noêsis*).

> Such as this is the imparticipable life (*amethektos zôê*) distinguishing primal being from intellect; on the one hand it participates in being, on the other it is participated in by intellect. This is identical to saying that the intellection is filled by the object of thought, and fills from itself the intellect, for being is the object of thought, and life is intellection (*zôê noêsis*). (Proclus, *Plat. Theol.*, 4.7.19–24)

Proclus unfolds the structure of imparticipable Life by applying strictly the triadic formalism, essence/remaining – power/procession – activity/reversion. He distinguishes three triads for Life, where each triad has reified each of its members, resulting in twenty-seven members in all. The highest triad (strictly, an ennead), which is closest to intelligible Being, is the essential aspect of Life, which 'remains' as its internal object of thought. In the middle lies the power and life of Life: here the whole level finds its most appropriate expression. The third sublevel is the one closest to Intellect, 'below', and is the activity and intellective aspect of Life.

The plane of Life is the Heaven of the *Phaedrus* Myth. Life marks the intelligible heaven, just as the world soul marks the boundary of the visible heaven.[86] The third triad, Life's activity, corresponds to the place 'Under the Arch of Heaven' (*hypouranious hapsis*). Souls follow the 'mystery-rites' (*teletai*) and prepare for the beholding of the realities of Being. Philosophically speaking, here are to be found the first distinctions: the 'perfection', 'of' and 'in parts'. It is also the level originating Shape (*schêma*), the geometry of circular, straight and mixed, and Contact (*haphê*).[87] Proclus adds that this is the paradigm of the 'joining', 'liberated' gods.

On the Arch itself (*ouranios hapsis*) stand the souls who have endured the long journey of reversion and are ready for initiation (*myêsis*) to apprehend the Vision (*thea*) of Truth beyond. According to the Chaldaeans, this realm encompasses the empyrean, aethereal and material zones. Here the process of separation has begun and the one coexists with the many (*hen kai polla*). In the 'Place Beyond the Heavenly Arch' (*hyperouranios topos*) spreads the Field and Pasture of True Knowledge (*alêthês epistêmê*), where the souls hungry for it partake of the ambrosia and nectar at the Platonic Banquet (*thoinê*). It is the place proper to the Cosmic Law (*thesmos*) and Justice (*dikaiosynê*), to Knowledge and Science itself (contra Plotinus, who had stationed them in Intellect). Here is the substance of the determinate procession into the many. This is Number (*arithmos*) in its own level.[88]

> Number has many properties, not all capable of being comprehended by human reasoning, which can be grouped into two primary functions (*dynameis*), the capacity to generate everything and

> the capacity to reassemble all products back to unity . . . Number is in the middle of the intelligibles and those of intellect . . . On the one hand, it untwists (*anelissei*) the intelligible manifold and brings forth (*prokaleitai*) its hidden (*kryphion*) and unified content into distinction (*diakrisin*) and productive generation, and on the other, it reassembles the manifold of the intellect into union . . . It substantiates first the intellective numbers, which constitute form (*eidêtikous*), are universals (*katholikous*) and preside over the creation (*poiêseôs*) and genesis of the universe; secondly, those that are above-the-world . . . and measure (*metrêtikous*) the encosmic gods [viz. Soul and the celestial bodies]; thirdly, these celestial ones, which are the governors of the perpetual revolutions, and twist together (*synelissontai*) all the circles according to their intellective causes; finally, those that are sublunary, sustaining and delimiting (*synechontas*, *peratountas*) the indefinite and unstable nature of matter with 'numbers' and 'forms' (Plato, *Tim.* 53b). (Proclus, *Plat. Theol.*, 4.84.3–86.19)

From this level 'proceed' the gift of primitive, generic life, and the mathematical objects. But the intelligible-intellective does not give a superior intelligence with which persons can comprehend the supra-intellective states. To reach beyond the definitional limits of intellect, Proclus appeals to the mystical vision in the *Phaedrus* Myth, which he links to theurgy (see section 10, on theurgy). From this level and above, Platonists and theurgists do much the same thing.

8. BEING AND ESSENCE

Activity and power presuppose that something exists in the first place. Likewise, intellect and life presuppose the presence of substantive being. Being (*on*) is basic to any thing that actually exists. Proclus identifies pure Being with Essence and Substance itself (*autoousia*). Why?

For post-Aristotelians, 'being' was ambiguous (Aristotle, *Metaph.*, 7.1ff.). One the one hand, it indicates this or that being, something which *is*. On the other, it encapsulates what things must have in order to count as beings: being-ness. To say that this or that thing *is*, includes the notion of its what-ness, by which it is identified: in this case its being-ness. In Aristotelian jargon, 'what-is-it' (*ti esti*) informs us of the essence (*to einai*) of a thing, while its essential properties make up, or at least contribute to, the definition (*horos*) of the thing. Platonists had their own views of what is real and qualifies as being. 'Being' when contrasted with 'becoming' refers to the 'really real' (*ontôs on*), the real-existent. The Platonic view of reality was exemplified in the Forms. True being is permanent and 'intelligible', that is, a well-defined, fixed object of thought. So the substance (*ousia*) of beings, their realness,[89] is their reason/account (*logos*) and essence (e.g. Plato, *Phaedo* 65d–66a, 92de). Outside Aristotle's suggestion that substance 'stands under' predication and change, we can translate the Greek term *ousia* as reality or essence (inclusive of account and definition).

So, for Neo-Platonists, being, real existence and essence are intimately tied to each other and to the philosophy of mind and knowledge. Real existence embraces all beings and is their proper essence. Beings exist insofar as they have a fixed definition, which is accessible to thought. But there are degrees of existence, as there are degrees of definition: some are better and clearer than others. There are also degrees of intelligibility. Proclus differentiates the being in Intellect from pure, intelligible Being, just as he differentiates intelligible from intellective intellect, and Forms in Intellect from 'proper' (*kyriôs*) Forms in the intelligible. Intelligible intellect (*noêtos nous*) alone has pure Being for its sole object of thought. The contents of the intelligible intellect are (analytically) the intelligible Forms. Perfect Essence is at the level of full Real-Existence, which is the true intelligible.

At the intelligible level, real being and essence are not distinct. The two become distinguished when things go into 'procession'. Their essence falls into inferior levels, where definition is not as tight. Their looseness is their loss. By Platonic metaphysics, they become less real and more phenomenal. As Simplicius later comments, things maintain their true essence as long as they are at the level proper to Being. Nonetheless, because at the intelligible level things are not purely unities, but unified wholes, the seed of distinction between Being and Essence is already present.

> The unitary nature is one, but the unified (*hênômenê*) nature, having little control over the unitary, is altered for the worse, from being one (*tou henos*) to being one real being (*to hen on*). And over-there [i.e. the intelligibles] the essence (*to einai*) is never distinguished from real being (*ontos*). Wherever a distinction appears in the unified natures, there plurality appears with the one, and has brought into being a whole with parts. Thus is manifested elsewhere a preliminary outline (*prohypographê*) of the things down-here [i.e. the sensibles] which are extended, and the essence has become something other than real being. (Simplicius, *In Phys.*, 773.20–6)

Imparticipable Being

Proclus unfolds the structure of monadic Being in the second half of book three of the *Platonic Theology* (summarised in ch. 27). He calls it the 'primal cosmic order' (*prôtos diakosmos*). Being is the basic property of existent things. It is the 'intelligible' order (*noêtos*), because it constitutes the object of thought *par excellence*. Further, here are contained the manifolds of Forms in a 'hidden' manner (*kryphiôs*). The various technical attributions which Proclus gives to the aspects of Being, and to the other levels, are derived mainly from Platonic sources. Middle and later Platonism had already absorbed Stoic doctrines. 'Hidden', 'ineffable', 'fatherly depth', etc., allude to the Orphic writings and the so-called Chaldaean Oracles or Proverbs (*Chaldaika Logia*), which formed part of the esoteric teaching accompanying initiation into theurgy.[90] Nevertheless, we can trace much of late ancient religious metaphysics to one form of Platonism or another.

Proclus specifies three triads for Being: one for its essence proper, presiding over the 'abiding' element; one for its power, presiding over the 'proceeding' element; and one for its activity, presiding over the 'reversion'. He formalises the Platonic derivations in threes: from the *Timaeus* 38bc, one, eternity, living being itself; from *Tim.* 37d, pre-eternal; eternity, eternal; from the *Sophist* 244, being, whole, totality; from the *Parmenides* 142d, one being, wholeness, one and being; from the *Philebus* 65, symmetry, truth, beauty; from the *Phaedrus* 246, good, wise, beautiful. Syrianus had established several of these.

The first triad is the being of Being, the substance of Substance, and is therefore the sublevel where the whole hypostasis of Being is expressed most appropriately; hence its titles, 'being itself' and 'substance itself' (*autoon*, *autoousia*). It is the highest level of Being, and is, in this sense, the level nearest to the pure unity. Thus it represents many aspects of the great One, which belong here substantially (*kath' ousian*), not as principles. It is the 'one' and 'father' (Proclus, *Plat. Theol.*, 3 ch. 18) and the 'one being' (*hen on*). It is the 'remaining' (*monê*) and 'limit' (*peras*) and antecedes even eternity. The essence of Being is an undivided unity, but unlike the absolute One, it is really existent. Like pure unity, pure being extends even to things without a permanent, defining 'form' to render them accessible to intellect. So, Proclus tells us (*El. Th.*, prop. 74) that the infinitely variable individuals within a species are existent, and privations have a sort of existence, although they lack form. The essence of Existence is more primitive than defined existence-in-act.

The second triad lies in the middle of Being and is the life and power of Substance to proceed. Appropriately, Proclus describes it as the 'intelligible life' (*noêtê zôê*), 'centre of the intelligibles' (*kentron noêtôn*) and 'procession' (*proodos*). More significantly, he places here the first 'wholeness' (*holotês*) and the origin of 'eternity' (*aiôn*).[91] That he places wholeness prior to totality (*to pan*), which is in the third triad, stems from the Platonic and Aristotelian arguments that wholeness possesses an integral unity, form and essence in addition to the sum of parts, and is therefore more complete than the totality of its parts, which consists simply of all the parts.[92] Here then, is the origin of the universe as an organic whole. This also means (Proclus, *El. Th.*, props 73–4) that anything that can be taken as a kind of whole, even an individual insofar as it is indivisible/atomic, has an existence but not a defining 'form'. Proclus' association of eternity with wholeness has as Platonic source the discussion on eternity and the Model in the *Timaeus* (37–8). However, next to the Platonic eternity seems to stand the Chaldaean Aeon,[93] albeit uncredited. Both describe the separation implicit in talking about a 'whole': it is not a unity, for it includes parts.

The third triad is at the tail-end, so to speak, of Being, which is Being's activity and reverting element. Proclus thus calls it 'limit of the intelligibles' (*peras noêtôn*), 'activity' (*energeia*), 'reversion' (*epistrophê*), and the 'intelligible intellect' (*noêtos nous*) or the 'substance's intellect' (*ousias nous*). It is 'eternal' (*aiônios*): that is, it has eternity as an attribute, since it is posterior to, and a participant of, eternity itself. This sublevel of Being embraces 'the total universe' (*to pan*), the 'living being itself' (*autozôon*) and the 'intelligible living being' (*noêton zôon*). In the direction of the procession from the One to Many, after the universe as a whole comes the universe as the totality of its parts. This constitutes, in effect, the nascent pluralisation of the universe; its unity and wholeness existing prior to it. Proclus calls this plurality the 'first-born'.[94] Here is to be found the 'Model', the Paradigm, of the world, and the 'Form of Forms' (*eidos eidôn*).[95] Being's intellect can only reach as far as to things with a defining 'form', that is, to species. Privations and individuals of species have an existence but are impenetrable to thought. 'Living being' and 'Model' derive from Plato's account of the *Timaeus*. The Creator is the Craftsman of the world and has a Pattern for its object of thought. The Model is the arrangement of all the Forms. So the Model is superior to the Creator. Moreover, as rational life is what is best in all created beings, so the Pattern is an intelligible living being. According to the Neo-Platonic exegesis, within the Model are established four archetypes. They are the Kinds of 'living-beings' corresponding to the celestial bodies and the creatures of air, water and earth. As Proclus sees it, this quaternity – the tetrad symbolic of the Pythagorean view of the cosmos – is the intelligible origin of the four Elements, Fire, Air, Water and Earth.[96]

Returning to the general character of the intelligible order, we saw briefly that Proclus designated the intelligible Being as 'hidden' (*kryphios*). His source seems to be the Orphics, and especially hymn 6, 'On the Firstborn' (*prôtogonos*), who is called ineffable and hidden. Yet how can the paradigm of intelligibility be hidden or occult? This is how he blends philosophy with religion.

> We are accustomed to saying that the intelligible simplicity must be distinguished from the intellective. For in that [i.e. the intellective] the one is equalised (*synexisoutai*) with plurality, and the distinction coexists with the singular identity of substance (*ousias tautotêti*). But the intelligible simplicity is uniform (*henoeidês*) and indiscernible (*adiakritos*) and hidden, having a head-start before the partible form of life and the intellective plurality . . .
>
> Appropriately, therefore, we say that the intelligible divinities reveal (*ekphainein*) the ineffable principle of all beings and that admirable superiority and union (*henôsin*). They have substantiated themselves in a hidden manner (*kryphiôs*), they comprehend the multitudes in a singular and united manner (*monoeidôs . . . heniaiôs*), and reign over the wholes in a transcendent manner and cohere the disorderly beings to all other divinities. (Proclus, *Plat. Theol.*, 3.100.23–101.4; 101.16–21)

Identity and non-discursive thinking (II)

Notice in the above passage how Proclus distinguishes carefully three kinds of simplicity. On the one side, there is pure union; on the other, there is a coincidence of coordinate discernibles. In the midst, there is indiscernibility. 'Life' would supply overt distinction as a principle between indiscernibility and coordinate discernibles. At any rate, in pure union, parts and plurality are absent; in the coordinate discernibles, parts are present and distinct. In indiscernibility, parts are present but we cannot tell them apart: distinction is 'hidden'.

From this scale, we gain a good insight into Proclus' awareness of the implications of non-discursive thinking. For example, we see why philosophy leads to, but cannot reach, the One God. Philosophy is concerned with distinctions. While philosophers plot the path to the One and infer the conditions for completing it, they also know that the final steps involve the loss of distinction. However, for Proclus, as for Plotinus, this is no reason to abandon philosophy, for all the steps must be trodden; a short-cut means missing salvation and understanding.

Proclus' scale of simplicity also gives us further clues on the problem of non-propositional thinking (see also section 6, Intellect, and section 9, Unity The henads). Does thinking at the intelligible, 'hidden' level become not only non-discursive but also non-propositional? I find the answer to be yes in most respects, except in one.

First, at the properly intelligible level, the object of thought is simple. The intelligible intellect has one and only object: the intelligible essence, which is real being. This is unlike the state of affairs at the intellective level, where the intellect has a complex object and multiple objects of thought (as in Plotinus).

Second, at the level of indiscernibility, thought and object are identical. At this level, 'the dual nature of thought and being is substantiated as a unity' (*In Parm.*, 901.12). There is no difference between having a thought about a thing, and being that thing. Propositions that a thing is so-and-so tell nothing more than what a thing *is*. Further, the intelligible Forms are comprehended as a unity. In this respect, there cannot be propositions as statements of the identity of a thing (as Sorabji suggests in *TCC*, p. 141), for Proclus clearly declares: 'every proposition says that "this" belongs to "that" ' (*In Parm.*, 70 Klibansky). Predication involves a degree of pluralisation ('this' and something else, 'that').

Third, if we focus on the essence of Being, which exemplifies the intelligible level as a whole, we find it transcending all thought and propositional truth. It is simply 'one' or 'one being', and just 'good'. It is a unity which transcends substantive being but is associated with it. Being's pure essence is thus no actual being, but a unity with existence (*hyparxis*). As we shall see next, this unity (*henas*) is the spark of divinity. The prime intelligible being is but the thinking activity of its essential unity (*Plat. Theol.*, 3.85.22–4).

Even if we look at Proclus' essential being once it is actual and real, we still find it transcending propositions. Prime Being (the 'first intelligible triad') precedes and stands above its power. Proclus sees this first direct expression of being to be pure truth. As an attribute, 'true', it is the key condition of propositions. 'Truth is the first-most intellection' (*Plat. Theol.*, 3.79.6). 'The second intelligible triad is substantiated according to truth, for it participates in the prime being, which is a being and really being' (Proclus, *Plat. Theol.*, 3.48.18–19). Everything associated directly with prime being is not located in a proposition – even truth stays unconditioned. Moreover, truth cannot be found in it, for truth is a consequence of basic being. Besides, for Neo-Platonists from Porphyry onwards, pure being is the most generic substance, which may have property but no definition by differentiation (see also Chapter 2, section 6, on property and definition). Within pure being it is impossible to say what is true, for thinking here is experience.

However, this is not (yet) the level proper to unity, which, according to Neo-Platonic analysis, determines being. So, even pure being has something else: its unity. We may say that pure being is one-that-is. Besides, Being is definable: it is the object of thought, and its substance. In this respect, we can appeal to propositions of identity. However, the various Platonic, Orphic and 'Chaldaean' designations need not be true statements of identity but the guesses offered by subjective mind craving to form propositions (see also section 5, Psyche, and discursive thinking). Nevertheless, Proclus seems to see such propositions as part of a more general issue. A prototype characterises its class of things. For this to be possible, the prototype must have something distinct and affirmative asserted of it, to be *that.* 'Indeed, if I am to state my opinion, positive propositions apply rather to the monads of kinds of being, for the power of generating things is in these' (*In Parm.*, 74 Klibansky).

9. UNITY

The henads

Henad means literally 'unit' (cf. Plato, *Philebus* 15). We find accounts of the henads in Proclus' entire *Platonic Theology* (the general theory in books 1–2), in the *Elements of Theology* propositions 113–65, and in the *Commentary on Plato's Parmenides* 1043–64. To the later Neo-Platonist, being is not the ultimate layer. Defined existence presupposes a certain integrity, a unity. But unity is not of the nature of being-ness. In this sense, being cannot supply nor define its very essence, its unity, but receives it as a derivative from an antecedent source. A being without its substantive existence is still a unit. This 'henad' is the origin of the being's identity.[97] It is not, in this respect, just a common universal. Rather, it is the 'measure' (*metron*) and 'first principle' (*archê*) of being. So Proclus points out that the relation between unity and being is not one-to-many, but one-to-one. More precisely (by his logic and metaphysics), it is that between pure one and intelligible one, which is a trinity of essence, power, activity.

> For every real being there is a unit, and for every unit a real being, a single existent only participating in a single unit only. (Proclus, *El. Th.*, prop. 136)

> Every divine unit (*henas*) is immediately participated in by some one real being, and whatever is divinised stretches out to a single divine unit; and there are as many participated units as there are the participant kinds of real beings. (Proclus, *El. Th.*, prop. 135)
>
> For there is a single unit for each intelligible triad. (Proclus, *In Parm.*, 1091.20–1)

The henads are one of the crucial Neo-Platonic developments after Plotinus. Who was the author of the theory is under discussion, since J. Dillon has put forward several reasons in favour of Iamblichus. One context seems to be the total descent of individual souls; we know that this doctrine belongs to Iamblichus. For souls to elevate, they must have a spark of divinity, their respective 'one'. Associated with it were the issues of divine plenitude (nothing must be void of divine providence), which highlighted the problem of divine immanence, and the philosophical account of the multitude of traditional gods. There are many divine 'ones', and they fill the universe. Another context is (Neo-)Pythagorean number-metaphysics in Platonism, which we know flourished at Apamea. The number 'one' is the head of the series, and contains implicitly the plurality of two, three, four . . ., and is the limit, in a way the essence of Form. That is, the henads are intelligible objects. Nevertheless, there is no clear evidence of a fully-developed theory of supra-intelligible henads until the Athenian School of Syrianus and especially Proclus.[98] Here we encounter the henads at the centre of philosophy, religion and natural science.

What the unit-henads are, and the One is not, is that they are participable. The 'ones' correlate with real beings, though they remain relatively exempt from them. Proclus divides them into two broad classes according to the general metaphysics of participation. There are units that are independent and complete in themselves, and there are units that belong to their participants. The second are immanent (say in humans and material things) and are 'irradiations' and sparks of the first.

To theology and theurgy, the self-substantiated participable henads constitute divinity in its many different forms. That is, only the independent ones are properly divine, gods. Since the henad is the most essential of all the levels, it is, according to Proclus' realist metaphysics, that which characterises the entity as a whole. By shorthand, 'divine henad' may stand for the god-entity as a whole. Again, by shorthand, 'henad' may stand for divine henad, since even the bare unities are 'irradiations' of the properly divine ones. A god as a complete entity will have real being. It may also have life, soul, body, etc., depending on the level on which the god has a 'foothold'. The dependent units, and all the levels (down to body) participating in the henad, are divine in a subsidiary sense, or are deifications. The difference between the all-transcendent One and the participable henads provides a philosophical explanation of the problem of many gods and religious truths, and of one divine essence. What people call 'divine' has an independent unity at its centre of being. Such gods are the objects of adoration and worship of many diverse religions. They are, however, the personified and distributed members of the One God, which abides unknowable and imparticipable.

So Proclus distinguishes between the simple state of unity, which every being possesses by virtue of existing, even a stone, and the self-determinate state of unity. Nevertheless, the simple states of unity are not empty of divine life, for they are the 'irradiations' of the gods. In this respect, everything in Proclus' universe has inherently a spark of divinity, down to matter.[99]

> The latter [the simple irradiations] are upon such a level that they belong to their participant – for, being incomplete (*ateleis*), they need a substrate for their existence. The former [the self-substantiated] make their participants belong to them – for, by being complete (*teleiai*), they fill (*plêrousi*) the participants with themselves . . . and they have no need for inferiors for their substantiation . . . From this it is apparent that some henads proceed self-complete (*autoteleis*) from the One, while others are simply irradiated states of unity (*ellampseis henôseôn*) . . . And so not every henad is a divinity, but only the self-complete henad. (Proclus, *El. Th.*, prop. 64)

> For if there are two sorts of henads, as it has been shown above, the ones are self-complete, and the others are irradiations from them (*ellampseis ap' ekeinôn*), and since the divine number is akin and of the same nature (*syggenês kai homophyês*) to the One and Good, then the gods are self-complete henads. (Proclus, *El. Th.*, prop. 114)

Unity, existence and individuality

One question about the henads concerns their existence. If they precede real being, do they exist at all? Are they mere potentialities? Proclus does sometimes speak of pure unity as non-being, and refers to states that do not count as existent (e.g. potentialities) as having a unity: 'immediately beyond being is not-being (*to mê on*), which is superior to being and is one (*hen*) . . . That which is not yet being (*oupô on*), but exists potentially (*dynamei on*), has already by its own nature a unity; and that which is after this level is actual being (*energeia on*)' (Proclus, *El. Th.*, prop. 138).

However, such statements do not tell us more than what we know already. Unity is intended to be more primitive than real existence, and embrace states that are not substantive. Not-being, in this sense, must be a relative term, relative to substantive being. Another example of Proclus' reinterpretation of negative states as relative is matter. When he says that celestial bodies are 'immaterial', he means that they lack gross, mass-matter, not that they lack matter absolutely (see Chapter 5, section 2, on Celestial physics, and Chapter 4, section 4, on Matter, motion and substance); all beings have some kind of matter as power. This is the case for unity, too.

Proclus confirms that unities do have an existence (*hyparxis*). However, this is not *hyparxis* inhering in concrete subjects (this or that human being, horse, table), as Aristotelians and Stoics advocated. It is unqualified existence, unconditioned even by being.[100] This sort of existence is closer to what Proclus seems to have in mind for the gods (hence *hyparxis* is sometimes translated as subsistence[101]). However, it would be more accurate to say that in (Neo-)Platonic metaphysics unity is the fundamental existence, which gives rise to reality. So the henads' *hyparxis* is the institution of existence; it may be called the root-being.[102]

The second question concerns their distinction. If they are units, bonded in a 'unical' manner,[103] are they not just clones? Is not their pluralism meaningless? With respect to their common essence, one-ness, yes, they exclude even the distinction implicit in intelligible being. As objects of discourse and knowledge, the unities transcend intellection and certainly eliminate all propositional thought. But because the henads constitute unity distributed to participants, the answer is no. The henads are not imparticipable, absolute unity, but unity correlated to existents, the henad of Creator-Intellect, the henad of pig. Indeed, the henads become the principles of individuation, not the loss.

The henad-units descend to 'procession' as much as souls, intellects, etc. This is but another way of expressing their participable nature. Henads are qualified by the different conditions they are in. The entire *Platonic Theology* describes divinities at the descending levels of being. If procession affects the separable, independent henads, it must affect even more the dependent, which are immanent in their subjects.

Proclus distinguishes different degrees of pluralism. Souls relate through similarity. Intelligible substances relate through sameness (*tautotês*), but they maintain their distinct self-identity. In this context, a better rendering of the Greek (*tautotês*) is 'coincidence',[104] for two distinct entities are made equal (cf. Aristotle's theory of place, *Phys.* 4.4: 211b12). Henads, however, relate solely by unity. Such distinctions are, again, practically analytic, for they follow from the definition of the corresponding entities. 'All things are in every thing but in a manner proper to each.' The mode of being of the perceiver defines how things appear to *be* and how they are distinguished from one another. Souls, being of the 'particulated' order, grasp things bit-by-bit; intelligibles, being wholes, grasp things simultaneously as wholes. Unities grasp things as one. Identity differs from union, in that identity entails its polarity, which is non-identity, 'otherness' or difference. Further, identity still implies that there are two different things, which are equal or coterminous. Union excludes even an implied polarity and difference. We may think of it as a perfect, all-inclusive identity. Proclus adds detail in the following important passage.

> We must understand that divine truth transcends the truth as we find in words (*logois*), for as much as the truth there [in language] is synthetic of many elements (*polysynthetos*) and that in a certain way it is mixed of contrarieties . . . [Divine truth] transcends the truth of *psychê* which considers things in beliefs and epistemic knowledge, for as much it is in some way partial (*meristê*), and is not the same (*tauta*) with the real beings, but resembles and conforms to them . . . It transcends the truth of the intellect (*noeras*) again, because it is substantiated according to real being (*kat' ousian*). It is said to identify with real beings, and identify through the power of its identity (*tautotêtos dynamin*), but on the other hand, it is distinguished from real beings by the otherness of its essence (*ousias*), and keeps its own substantiation unconfused with them. Therefore, only the divine truth is an indivisible union (*henôsis*) of them and a total communion, and through it the ineffable knowledge of the gods is superior to every knowledge and every secondary species of knowledge . . . It alone comprehends all real beings in a conjoint manner (*synêirêmenôs*) and in an inexpressible union, and through it the gods know everything the same, the wholes and the parts, the beings and non-beings, the timeless and the temporary; not as intellect knows them, that is, the part in a universal and the non-being in being, but each of them in the same way, so far as common notions and so far as individuals, and even let us say, the most individual (*atomôtata*) of everything, even the infinity of future contingents, and even matter itself. (Proclus, *Plat. Theol.*, 1.97.11–98.12; cf. Proclus, *In Parm.*, 745.10–746.1)

Note in the passage, and the aforementioned, that a henad always relates to a being or event. As we saw in the previous section on Being, privations (for Neo-Platonists, evil is merely the absence of good) qualify as barely, not substantively, existent. Proclus also tells us that unity extends to things that are not actually existent, such as potentialities and future contingents – which links to the 'Proclean canon' (see subsection below on the inverse hierarchy, and Chapter 2).[105] Whatever has not yet come or may not come into being still has a degree of determination, a unity. We see another reason for rendering *hyparxis* as subsistence, although it is still better to see it as unqualified existence. The henad is the essence of being, so Proclus is an essentialist. But since the henad's bare existence precedes substantive being, he may also be called an existentialist.

Unity reaches further than real being and 'comprehends' things that even a pure intellect could not. Moreover, since the unities of the lower realities and the non-(actually) existent are 'irradiations' of the independent, divine unities, the gods have access to everything that has happened or may happen. For Proclus, this knowledge constitutes the divine providence. He etymologises the Greek for providence, *pronoia*, as *pro noia*, that is, as pre-intellection (unity precedes being and intellect in the metaphysical order).[106] Gods have 'foreknowledge', and that is how they know what is best.

Note how he says that unity comprehends things 'equally', that is, in the same manner exactly as they are. Unity, being as it were a perfect identity and a complete purity, has no filters, nothing 'else', to limit its knowledge. On the other hand, souls (personal minds) are limited by their image-making, their involvement with bodily senses, and the transitivity of discursive thinking. Intellects have a direct grasp of things but can comprehend only those with a defining 'form' and 'paradigm', that is, species. Proclus denies form to individual members of species, for they come and go, have an unlimited variation, and thus lack a fixed definition.[107] Nevertheless, insofar as they have some being or existence, individuals do have a henad-unity. So, even 'the most individual' have a unity. Unity is the ultimate layer of any thing. Unity is where the analysis of being culminates.

From another perspective, unity is the first principle which, in a realist system, determines the character of subsequent levels: real being, life, intellect, soul, nature, body. On the grand scale, the imparticipable One is the first and ultimate principle of all things, including the actual, the possible, the contingent and the privation. On the scale of each entity, the participable henad is the unitary first principle of the bundle of layers which compose a thing: not as a particular, nor as something specific, but as a unit. Each henad-unit is as broad or narrow as the thing which it determines. The henads, units, as first principles are the source of individuation.

Proclus readily admits that the henads are not all the same but have a speciality. By his train of argument, they must be different from each other, for everything else that is dependent on them – intellects, bodies, etc. – would also be the same. From the diversity of our universe, we can infer that the first principle of each distinct thing, a unit, is different from others. On this rests Proclus' Neo-Platonic concept of 'divine allotment' (*theôn klêros*). Each thing bears the sign of the appropriate divinity, each divinity having a distinct characteristic (*idiôtês*).[108] Relations between different beings ultimately become relations between their henad-unities. Further, because all simple states of unity have as reference the independent god-unities, all things and relations in Proclus' system refer, in the end, to gods. In this respect, Proclus' metaphysics is a theology, just as the objects of his theology are objects of philosophy.

> It is the same to say unit (*henada*) and first principle (*archên*), if in fact the first principle is in all cases the most unificatory element (*henikôtaton*) . . .
>
> And yet, despite this degree of unity in that realm, how marvellous and unmixed is their purity (*katharotês*), and their individual property (*hekastôn idiotês*) is much more perfect than the otherness of the Forms [i.e. each Form-property implies its polar opposite] . . . so that there is a perfect distinction between the more whole and the more particular, between those associated with remaining, procession and reversion, between those concerned with generation, those with elevation (*anagôgika*) and those with creation, and generally with the individual characteristics . . . which our tradition celebrates.
>
> Whereas, then, there exists there both indescribable unity and yet distinctness of each individual characteristic, for all the henads are in all, but each separately (*chôris*), we gain knowledge of their unity and their individual character from things secondary to them and dependent upon them. (Proclus, *In Parm.*, 1048.1–2; 1048.21–1049.3)

Below is a table of the orders of independent henads/gods characteristic of the main levels of being.[109] The celestial bodies are the last of the beings with a divine henad. Their influence on the realm of generation, the sublunary world, provides us with a link to the divine realm proper. Things on earth bear the mark of the characteristic property of their henad.

The intelligible (*noêtos*) and hidden (*kryptos*) for Being.
The intelligible and intellective (*noêtos kai noêros*) for Life.
The intellective (*noêros*) for Intellect.

The directive (*hêgemonikos*), above the physical world (*hyperkosmios*), for Soul.
The liberated (*apolytos*), just above and just within the physical world (*hama hyperkosmios kai egkosmios*), for Nature.
The encosmic (*egkosmios*), within the physical world, which includes the world soul and the celestial objects.

To mention some of the intricate terminology, because unity is the highest and best of all the levels, it is frequently called the 'summit' (*akron*) and the 'flower' (*anthos*). Henad as a 'flower' has a theurgic pedigree, particularly the so-called flower of the soul, and the flower of the intellect. This gives Proclus enough excuse to indulge in rich metaphors. One example which I have encountered is his allusion to the orbiting celestial bodies as a bouquet of 'unit-form flowers' (*anthê henoeidê*) which decorate the cosmos. Elsewhere he gives a full phytological imagery, seed – stalk – flower – fruit.[110]

Some gods have the property of limit predominant, others that of unlimited, and others that of providence. This henad-typing confirms that they do not originate *directly* in the absolutely homogeneous One itself, but in its exteriorised aspects, Limit, Unlimited (and Foreknowledge).[111]

The divine henads with limit predominating are said to preside over the 'remaining' aspect. They constitute the series of gods whom people generally know as 'Fathers' (*pateres*). From the level of Intellect, such gods have the more specific function of 'Maker' (*poiêtês*). They create by bestowing 'form' (*eidopoiia*). Chief among the Father gods are the ones belonging to the 'solar' (*hêliakos*) series. This chain of light commences with the One, continues through the Creator of the world, to the supra-cosmic sun, personified by Apollo, and ends with the visible sun, (*helios*).

The gods which have infinitude predominating are said to preside over the property of unceasing (*to anekleipton*) capacity and 'procession' (*proodos*). These deities exhibit the multiplying and continuous property of power. They are commonly known as goddesses, the 'Mother' divinities (*mêteres*) who are 'prolific' (*gonimos*) and 'generative' (*gennêtikos*). Their more specific function, again from the level of Intellect, is to be the cause of 'life-giving' (*zôogonos*).

Proclus defines also the deities who preside over the 'perfective' (*teleiôtikos, telesiourgos*) quality. They take care of the reintegration of souls, the 'return', which is a task of providence. The more specific form of this series is to initiate the 'elevation' (*anagôgê*), the theurgic uplift of soul. He identifies those who are the 'Guardians' (*phrourêtikon*). Their more specific function is to be the 'Purifiers' (*kathartikos*) and 'Liberators', who release the divine element from extraneous, confusing elements and lift it up (*apolyein, exairein*). He introduces the guardian series first at the level of Intellect. From this plane of being downwards, there is a need to protect and conserve the immutable nature of entities with a divine henad, and to maintain a distinctness of defining form. To this series belong Proclus' remarkable 'satellites' of the celestial bodies.

Cosmologically speaking, at the level of unities we glimpse at the most primary state of the universe as it is prior to any conceivable beginning. It has not separated even into an actuality. Yet in this most unified state stir the singularities of differentiation. Out of them will emerge existence in all its forms.

Limit and the Unlimited

The specialisation of unities presupposes principles around which they specialise. What can be simpler than unities? An answer is found in the analysis of their constitution. Unities (and their respective beings) have an aspect by which they are kept distinct from one another. It is their discreteness and essence: their 'limit'. On the other hand, they have no bounds, for there is nothing else to impose a limit: they are 'unlimited'.

The principles more ancient than being and henad-unities are Limit and the Unlimited, with the meaning also of finite and infinite, determinative and indeterminate.[112] We usually find them in Proclus' descriptions of the absolute One, or with accounts on the nature of Being, in the *Elements of Theology* propositions 87–96, the *Platonic Theology* book 3 chs 8–10, and the *Commentary on Plato's Parmenides* 1118–24. Before the Athenian School, Iamblichus had this pair generate the 'one being' from the causal One, and select discussions on infinite power go back to Porphyry and Plotinus (e.g. *Enn.* 6.9.6). However, the classical source for it is Plato, *Philebus* 23c, and the Pythagorean table of opposition (see Proclus, *El. Th.*, props 89 and 90; *Plat. Theol.*, 3.32.14–23).

Where do the henads stand in relation to this pair? Proclus usually places Limit and the Unlimited after the One and before Being, which leads the reader to think that they compete with the henads. Further, if the henads are posterior to the Limit and Unlimited, then, as the twelfth-century Byzantine theologian Nicolas of Methone and many scholars after him, including E. R. Dodds, have asserted, duality must contaminate the unities. In addition, the presence of either the henads or the pair alone would seem sufficient to fill the gap between the One and Being.[113]

I take the evidence to be in favour of the Limit–Unlimited as causal principles of the henads, Being, et al. First, the two principles are not ingredients of compound substances but a unity analysed in two aspect-senses. The two prime principles 'reveal unto light' (*ekphainei*), manifest the absolute unity, the One.[114] Limit is said to reveal the unifying aspect, which supplies the stability and identity of things, while the Unlimited reveals the causal power to multiply. There is no infinite regression, however, for power is infinite in quality only, not in size or number. Unity contains implicit (at least) two principles. They provide the first seeds of differentiation necessary for the procession to commence. The pair explicates the ineffable One, and thus renders it causal.

Secondly, they are not just two but three. Limit and the Unlimited may be described as the immediate causes of Being (after Plato's *Philebus*), but careful reading shows that the two principles form a triad with Providence.[115] If Limit corresponds to the 'remaining', and Unlimited to the 'proceeding', Providence corresponds admirably to the 'returning' moment of Unity. This is certainly evident from the presence of providence with unity and the unlimited in the discussion on the henads (*El. Th.*, props 113–45). This implies the existence of all three as principles prior to the henads. Furthermore, Proclus explicitly says that there is such 'activity' – activity as the third moment of triadic structure – higher than the levels proper to Being and Intellect (*El. Th.*, prop. 120). So the pair is in fact a triad, a trinity. Limit reveals the essence of divinity, Unlimited the power, and Providence the activity. The basic metaphysical structure is made complete.

Thirdly, the henads do not compete with the Limit, the Unlimited and Providence; they are under them. Proclus tells us clearly that some self-determinate unities manifest the character of Limit, the 'Father' gods, others that of Unlimited, the 'Mother' gods, and others that of Providence, the 'Perfecting' gods. So the divine unities are not contaminated by duality, even if the critics cared to extend such criticism to the trinity too; they exhibit speciality. In view of what Proclus says about the sexes of the traditional gods, we could add that the One God is revealed here as the Father–Mother God, whose coupling brings forth the the universe itself.[116] Limit and the Unlimited together are one: the prime cause of all existence and being.

For Proclus, limit and the unlimited have different senses relative to the different levels of being. Form and matter (whether physical or intelligible, as suggested by Plotinus) must be understood as one of many senses of Limit and the Unlimited. They are, however, imperfect images of them. Here is a composite list of the modes of Limit and the Unlimited.[117]

Eternity (Being)	has limit by being the measure of intelligibles, is unlimited by its unceasing power;
Intellect	has limit by creating according to the Paradigm, is unlimited in its creative power;
Soul	has limit by being the measure of periodic motion, is unlimited by being in a perpetual state of motion;
Celestial bodies	have limit in their orderly, finite periods, are unlimited in the variation of planetary movement;
Generation as a whole	has limit in the finiteness of its forms, is unlimited in the complexity and constant change;
Physical things	have limit by their form (*eidos*), are unlimited by their matter (*hylê*);
Formless mass-matter	has limit by being a definite quantity, is unlimited in being capable of indefinite division.

Of the pair, the more difficult to understand is the Unlimited. Why are unities and Being unlimited? Proclus favours two reasons. Unlimited itself 'has no bounds underneath it' (*In Parm.*, 1120.26ff.). Second, unlimited does not refer to amount or size, but to being infinite in power (*apeirodynamos*) (cf. *El. Th.*, props 84–6). According to the *In Parm.* section, the first reading is substantially the same as an earlier definition of unlimited as the limit of everything which cannot be limited by anything else. Whoever was the author of it distinguished another sense of 'unlimited': that which cannot be comprehended (*alêpton*) by inferior things, and is infinite in extent or number (*adiexitêton*, *aperiêgêton*) (the last two terms originate, respectively, in Aristotle's account of infinity, *Phys.* 207b29, and in Plato's description of the innumerable details, *Laws* 770b7). Unlimited power appears in Proclus' discussion of perpetual beings. They must be unlimited in power to maintain their existence. He rejects infinity in quantity on similar grounds to what Aristotle and Plotinus did, but also because, to Proclus, infinite quantities involve a division and dilution of power. Infinite containers cannot contain infinite power (Sorabji, *MSM*, 250ff., sees it throughout as a problem of putting infinite power in finite body). He repeats over and over again that power is generative of things, is the source of 'processions', etc. (which is practically the same as the causal 'unlimited' attributed to Iamblichus).

Do these readings of 'unlimited' refer to the same thing? No, for some apply to the entity itself but others to its relation with entities influenced by it. In the Neo-Platonic context, 'unlimited' refers to two distinct kinds of power, an internal and an external. How long an entity lasts is clearly its internal affair. For it to remain 'uninterrupted' (*anekleiptos*), its substance must have the appropriate kind of internal capacity: that is, the unlimited. But to the Neo-Platonist, this can only hold as long as the entity is an undivided whole. Breaking it into parts imposes a limit, a break on it. Its (internal) power ceases to be unlimited and becomes limited. In this sense, the entity becomes weak by its division. The more particulated it gets, the more weak it becomes, until it cannot fill its home substance and ends purely as an 'incomplete' potential power, that is 'matter'.

> [Real Being] is unlimited with respect to its potency (*kata tên dynamin apeiron*). Accordingly, what renders it indivisible makes it also unlimited; and a being is more unlimited (*apeiron mallon*) in proportion as it is more one (*hen*) and indivisible. For as potency is divided it becomes weak and finite, and potencies completely divided are in every way finite [i.e. power as matter distributed to individuals] . . . For partition dissipates and dissolves the potency of every thing, but indivisibility, compressing and concentrating it, keeps it in itself constant, without interruption or diminution. But infinite in size or number signifies the total privation of indivisibility and the lapse from it . . . Hence unlimited potency cannot reside in anything unlimited in number or size, since unlimited potency coexists with indivisibility. (Proclus, *El. Th.*, prop. 86)

On the other hand, unlimited power in the sense that it has 'no bounds' placed by those beneath it, and as 'generative' of things, clearly concerns external affairs. It involves causation and predication. The greater, stronger, the cause's power, the greater number of effects are predicated of its property. In other words, the cause-property is the genus of its effects as species. To make it more visual, from the standpoint of the cause as genus, it can see and grasp all its species distributed 'under' it, but, from the viewing angle of the species, they cannot grasp the whole genus spread 'over' them, any more than, for example, fireflies can grasp what light is. Light itself is 'generative' of the light-bearing species, but light is 'not limited', nor can it be 'comprehended' by them.

Nevertheless, the two kinds of power amount to the same because the internal entails the external. The way in which a thing affects and brings about others depends on the quality, the disposition, of its own nature. A can of paint that overflows and stains walls, floors and shirts, spills the paint it contains already.

Thus unity is unlimited in all senses. Unity has unlimited (internal) power, which outlasts eternity and 'overflows' unceasingly to produce everything. Unity brings about all beings and the innumerable number of non-beings, such as potentialities and contingents. But it cannot be limited or comprehended by them.

The One

If unity is the ultimate reality of self and the universe, by Proclus' metaphysics the archetype is the imparticipable One. This simple One is the 'root' and the final cause of all there is. It is also the highest value, the Good (*agathon*). In religious terms, the One is the God transcendent of Being, who is distinct from and higher than the Creator.[118] In cosmogonical terms, the One is prior to the creation of time and space, even prior to eternity, so our time-bound modes of description, past, present and future tenses, have no temporal or cosmogonic reference.

> All that exists proceeds from a single, first cause (*mias, prôtês aitias*) . . . or else there would be regress to infinity (*ep' apeiron anodos*), cause lying behind cause, so that the positing of prior causes would never cease . . . there is a first cause of all existing beings from which they proceed separately as offshoots from a root (*ek rhizês*), some being near to it, and some more remote; for that there is not more than one such First Principle has already been established, inasmuch as plurality subsists posterior to the One. (Proclus, *El. Th.*, prop. 11)

> For if it belongs to the good to save and preserve (*sôstikon*) all that exists – on account of which it is originally the desirable object (*epheton*) of all – and if that which conserves and holds together (*synektikon*) the substance of each thing is unity (*hen*) – since by unity everything is preserved in essence, whereas scattering (*skedasmos*) alters the substance of each thing – then the good wherever it is present makes such being one and holds it together by virtue of this union (*henôsin*). But if union is in itself good, and all good tends to create unity, then the Good unqualified (*haplôs*) and the One unqualified are identically the same . . . Goodness, therefore, is union, and Union goodness, the Good is one, and the One is primarily good. (Proclus, *El. Th.*, prop. 13)

The concept of the One has a long history, from the late Academy through Middle Platonism.[119] It seems to commence in the early Academy's interpretation of Plato's *Parmenides* in conjunction with the Pythagorean tendency evident in the late Plato. Speusippus is the most likely culprit.[120] The Good as an ultimate principle can be found in the Aristotelian *summum bonum*, and in Plato's *Republic* 509b9, where the 'good' is 'beyond being' (*epekeina ousias*). The explicit identification of the Good with the One seems to be specifically Neo-Platonic. Plotinus devotes much of the sixth *Ennead* (6.7, and 6.9) to it, and Proclus teaches and preaches about it in the *Commentary on Plato's Parmenides* book 7, and the *Platonic Theology* book 2 (chs 6 and 7). The first and final causes are joined.[121] The Platonic heritage of Socrates and Parmenides is continued by Proclus, for the metaphysical levels are also states of value.

> Now, that the One is God (*to hen theos*) follows from its identity with the Good; for the Good is identically with God – for insofar as it is above all, and is desired (*ephietai*) by all, it is God and that which is the 'whence' (*aph'hou*) and 'whither' (*pros ho*) of all beings, this is the Good. (Proclus, *El. Th.*, prop. 113)

Proclus submits that the One can only be approached by analogy or negation. Analogy tells us what the One may be *like* judging by Its effects.[122] The renowned Neo-Platonic analogy is that of light (cf. Proclus, *Plat. Theol.*, 3.16.19–17.4). The One is like the sun's light which illuminates the world and radiates far and wide while it remains undiminished at the source.[123] The leap of faith necessary to reach the One takes place in a state of 'illumination'. The light of the One resides in the innermost unity but is conditioned appropriately in each level of existence. However, we infer the first principles from the constitution of beings (see also section 5, Psyche, and section 8, on non-discursive thinking). Thus the name 'the One', for Proclus, is a projection of the inner, personal 'one', the henad (*In Parm.*, 54.11–5 Klibansky). Indeed, Proclus likes to correct previous Neo-Platonists by pointing out that their references to the One usually mean the henad-one of Intellect, Soul, etc.

Negation tells us what the One is *not* in our attempt to measure divinity by our standards. No assertion can apply to the One. It is completely indescribable with language. To climb to the root-foundation of knowledge and existence, we have to throw the ladder away and abide in utter 'silence'. More than that, according to Proclus we cannot remain even in silence, because this implies that such a state applies to the One. The One is itself 'beyond being, activity, silence and stillness' (*In Parm.*, 1171.1–15).

The One is beyond language, knowledge and existence. It is the 'ineffable' (*arrhêton*), the 'unknown' (*agnôston*) and the 'exempt' (*exêirêmenon*).[124] The negative, 'apophatic' terms spring partly from Platonism but also from the 'Chaldaean' Oracles as revelatory proverbs.

How much a transcendent the One is, we glimpse from Proclus' comparisons of It with the participable unity-henads and with Being. Unity is more absolute than Being. Unity precludes the distinction implicit when we say that this is identical with that; it is not identity with respect to anything else. Further, the participable unities are always connected to some being, and are existent. By contrast, the One does not relate to anything at all – not even to existence. Proclus tells us that It is above potentialities and actualities, and transcends the most unqualified kind of existence (*hyparxis*) (*In Parm.*, 1167.25–36). Further to stress that the One is not just the universal class-property of unity but is its archetype and source, he does not hesitate to make a word up for the One's character: 'super-union' (*hyperenôsis*) (*In Parm.*, 1181.39, *Plat. Theol.*, 5.103.17).

From the outset, Neo-Platonists had to face the question: how does the One come to be a cause when it is so detached? Plotinus answered it by pointing out that the One extends beyond itself in a spontaneous and natural way, like light emanating from a blazing fire. There is nothing to hold back the One's power, so it becomes causal. Neo-Platonists, however, were not altogether satisfied and continued to explore solutions until the end of ancient Neo-Platonism. Iamblichus, for example, seems to have suggested two Ones, the strictly ineffable and the causal. Nevertheless, the Athenian School rejected this and returned vigorously to the single One and its paradoxes.

Proclus does refer to the 'overflowing power' of unity. However, his metaphysics allows for a more gradual transition from the absolute One to the Many. First, Limit–Unlimited constitute, in effect, the causal One. Limit is the essence of the One, and Unlimited is the boundless power of the One's Limit. The Unlimited is responsible for 'procession', whereas the Limit 'remains' and is the goal of 'reversion'. Secondly, the general scheme of imparticipable–participable rationalises how an absolute links to the relative. The One is thus treated as a case of archetype–universal. The archetype is the source of the universal which is distributed to participant-species. The One is exempt from involvement with the generation of Being, Intellect, Soul, etc. The unity-henads are those that take part, and are the 'first principles' of the respective Being, Intellect, Soul.

> If [Soul, Intellect] produce by their essence (*tôi einai*), far more will that One, which is prior to them, produce everything by the fact that

> it is One (*autôi tôi hen hyparchein*), without needing any actuality to accompany the essence of being one. (Proclus, *In Parm.*, 1168.16–20)

Positive solutions to the paradox of the One rely on a mild transcendence. Negation is one of the paths that inferior beings must take, for they are inadequately equipped to comprehend the One's depth and breadth. This does not mean that the One *is* a negation. The apophatic way is analogous to the stripping of differences which distinguish species. Eliminating the specialisations which condition a genus-type leads to the general character in its purity. In other words, we are back to the imparticipable versus participable. For this to work for unity, the One must be in some way positive. After all, the participable unities, the henads, are said to have an existence.

Still, all this sophistication would have fallen flat had Proclus relied solely on One's extreme transcendence. On such an occasion, he would have become a paradox-monger. Absolute negation negates everything. It is no use appealing to an asymptotic approach, or to the peculiar logic and mathematical properties of infinite sets, or to mysticism.[125] None could rescue such Neo-Platonic One from nihilism and absurdity. Why should virtue and reason be any *better* than their privations at reaching the One, when in the end nothing matters? How can the One be inferred, when absolute negation eliminates not only our assertions but also the basis from which we assert or deny anything at all? At best, such an ineffable One would be like a 'black hole' of modern cosmology, from which any random quantum effect can arise.

Proclus does not conceive the Neo-Platonic One in such bleak terms. He agrees with Syrianus that neither positive nor negative statements apply to the One, and takes the double negative in a positive sense (Proclus, *In Parm.*, 70–2 Klibansky). He carefully distinguishes between the One as 'superior to being' from 'not-being', and warns against letting our creative imagination sink us into the latter. The One is the superlative of realities, not their privation. Reason and virtue lead us ever closer to that which is the root-foundation of reason and virtue (*In Parm.*, 44 Klibansky). There is no room for randomness at the source of the universe. Everything has a cause and explanatory reason, exactly because there is the One. Without the One there would be infinite regress and unintelligibility (*El. Th.*, props 1, 11, 12). The One is the limit which guarantees the intelligibility of the universe (*In Parm.*, 1209.24). The orderly existence of the universe presupposes the Good One (e.g. *El. Th.*, props 7, 9, 12).

Proclus' One is completely transcendent from the physical domain, which, according to Neo-Platonists after Porphyry, is bound under the Aristotelian categories. Is God equally ineffable and transcendent with respect to the gods? Only another unity can touch the One. Ultimately, no-one 'under' the One can fully comprehend It. Proclus and other Greek scientists (e.g. Ptolemy) faced a similar problem when reality challenged them (see Chapter 5). The earth-centred orbits of some of the cosmic bodies, the planets, appear irregular. Does it mean that these celestial gods behave irrationally? Philosophers who accept realism also tend to accept the limits of knowledge. Objective reality transcends our judgements. We may infer what it is like or not, but what it really is only it fully knows.

One, Matter and the inverse hierarchy

Proclus' view of Matter is grounded in his metaphysical rule (see also Chapter 2, section 6, Participation, and section 7, Causation, on the 'Proclean canon') that the higher a cause is, the more fundamental and more powerful it is. The more fundamental is at once the more basic. It is also the more generic. Being generic, it is the ground for the differentiation of the more specific characters – as a genus is to species. For example, substance or being is the most general character there is for real-existent things. Life differentiates living from non-living beings, and rational life further specifies human beings (as in Plato and Aristotle). When Proclus adds the interesting reason that the more primal cause-properties are strengthened by the specific, he probably means that the more specified things have a tighter definition (Proclus, *El. Th.*, props 70–2).

By the Proclean rule of causation as predication, Unity and Being extend their causal dominion, their character, as far as to simple bodies, such as stones. More specific causes, such as Intellect and Soul, 'irradiate' only as far as to living creatures. Body by itself is just a three-dimensional quantity, and is predicated only of being, while pure Matter can be reached only by unity.[126]

For Proclus, Matter encompasses four conceptions. Matter is one and simple for all the universe. It complements the One cause of the universe, and has, to a degree, value. Matter is an incomplete power, a potential, a power to receive (the Aristotelian sense). Matter as indefinite and indeterminate is a mode of unlimitedness.

Matter is not a thing, it has no substantive essence. It is just a power. Nevertheless, it does not live in the same house as the powers of active principles and existent beings. It is not power in-activity. It is what is waiting to be filled by the active. Matter is an 'incomplete' power, that which a participant must have in order to become informed and defined:

to 'exist'. It is as if we isolated conceptually the preparedness of a thing to be and gave it a name.

Proclus rejects Plotinus' division into two types of matter, one intelligible and the other sensible. Once again he turns away from dualism, as he does with his view of Limit–Unlimited.[127] Matter is one for all the universe. There are different modes, each appropriate to the rank of reality which it relates. Proclus differentiates between Matter proper, which is a universal potential, and the mass-matter of the sublunary domain. The latter is the 'most gross matter' (*pachytatê hylê*), which must be distinguished from the former, the 'universal substrate'. Gross matter is endowed with indeterminate quantity, the mode of matter fit for entities with mass. Corporeal matter is distinct from general Matter as an incorporeal power. Although at first sight this appears to follow Plotinus on intelligible and sensible matter, Proclus really distinguishes between the fundamental nature of Matter itself and the lowest of its many modes.

> For we do not say that there are many kinds of matter (*kan pleious hylas*) of the universe, but that there is one kind of Matter commencing from above (*anôthen*) and proceeding through declension (*di'hypheseôs*) till the very last sediment (*hypostathmês*) which is indeed formless (*ontôs aneideon*). (Proclus, *In Tim.*, 2.65.21–4)

> For the last of beings is like the first (the One), that is, most simple, because it proceeds from the First alone; the one is simple by being above (*kreitton*) all composite existence, but the other is by being below it (*cheiron*). (Proclus, *El. Th.*, prop. 59)

> The associates of Plotinus point out frequently that Being is composed of form and intelligible matter, and make form correspond to the One and the existent (*hyparxei*), and make power (*dynamin*) analogous to matter. If this is what they mean, they are correct; but if they attribute to the intelligible substance something which is by nature shapeless (*amorphon*), formless (*aneideon*) or indefinite (*aoriston*), then they seem to me to mistake the Platonic thought. For the unlimited is not the matter of limit, but its power; neither is the limit the form of the unlimited but its existence. (Proclus, *Plat. Theol.*, 3.39.24–40.6)

> 'Matter is potentially all' [Aristotle, *De Anima* 3.5: 430a10–11], since it is substantiated by the first *dynamis*. But that is the generating power of everything, whereas the power of matter is incomplete (*hylês dynamis atelês*) and is in need of substantiation from every actuality. (Proclus, *Plat. Theol.*, 3.34.7–11)

Proclus extends his sentiments on the continuity of Matter to his view of it as a mode of infinitude. Matter is but one of the many modes of the Unlimited, which is the power of the One. For this reason, in a remarkable statement, he does not hesitate to call matter 'good', like the One Good God:

> If bodies are made of limit and unlimited . . . it is evident that matter is an unlimited and form a limit. If, therefore, as we have already said, God substantiates every unlimited, It also substantiates matter, which is the last unlimited (*eschatên apeirian*). And that is the First and Ineffable Cause (*arrhêtos aitia*) of Matter; and because everywhere the sensibles exist by analogy to the intelligible causes . . . likewise, the unlimited which is down-here [*entautha apeirian*: gross matter] derives from the Prime Unlimited, just as the limit which is down-here [viz. physical form] is from the Limit over-there. For it has been shown elsewhere that the Prime Unlimited, which is prior to the mixed existence (Being), is established at the summit of the intelligibles and from there it extends (*diateinei*) its irradiation (*ellampsin*) as far as to the last of things (*eschatôn*), so, according to it, Matter proceeds from the One and the Unlimited which is prior to Being . . . For this reason, matter is to a degree good (*agathon pêi*) and infinite, as well as that which is most obscure and formless (*amydrotaton on kai aneideon*), because they (the One and Unlimited) exist prior to the Forms and their manifestation (*ekphanseôs*).[128] (Proclus, *In Tim.*, 1.384.27–385.16)

Proclus' general metaphysical principle that the more universal the cause, the more powerful it is, produces a strange result. Causes such as the One, Being and Life, are more generic than, say, Intellect and Soul, and extend their character further. This means that at the lower ranks of the hierarchy of existence entities are 'illuminated', predicated not solely of generic characters, but of generic *and* specific ones.

So the chain of being seems to proceed initially from simplicity to complexity, to the level encompassing the maximum number of properties, and subsequently from complexity to simplicity. The first simplicity is the One and the last Matter. Which section of the chain constitutes the inverted, as it were, part of the hierarchy depends on which level is reckoned to be the most complex. It, in turn, depends mainly on the precise role of Soul and Nature relative to Body. This, furthermore, pivots on the twofold function of the Intellect-Creator: the contemplative and the efficient, the thinking and the doing.

If the rational aspect of *psychê* is emphasised, and nature acts as the cause of change and motion immanent in body, then humans count as the most complex beings, for they have life and a personal mind to deliberate. Direct intellection is superior, and sense-perception is inferior to discursive thinking, but both are intuitive. Intellect is simpler than (rational) soul, and so are animals, which have a touch of cognitive powers. Plants, being merely alive, and inanimate things, such as stones and dead bodies, will be successively more simple. But if the motive aspect of *psýchê* is emphasised, and nature becomes an auxiliary cause to the principle of self-motion, everything that is subject to change and motion is the most complex of entities. The inversion will not commence until body.

Of the two, the first is documented considerably better in Proclus' works than the second. It may be so because some philosophers after Aristotle had already noticed versions of this paradoxical simplicity at the ends. Nevertheless, Proclus is the first to provide a consistent philosophical account for it.

Plotinus mentioned that matter has a simplicity akin to the intelligibles: 'The lower is similarly simple because of the privation, the fading-out, of a characteristic' (*Enn.* 6.7.13). Half a century earlier, Alexander of Aphrodisias, the Aristotelian professor at Athens, noted that the movements of the celestial bodies and those of inanimate bodies on earth are alike simple. By contrast, the movements of living and rational creatures, such as humans, are complex. He related the issue to the debate on freedom of action.[129] He had been drawn to it by a passage in Aristotle's *On the Heavens* (*Cael.* 2.12). Aristotle had observed that at the two extremes of the celestial realm, the distant fixed stars, and those which are nearest to earth, the sun and the moon, have a movement which is simpler than that of the five planets (arranged between the fixed stars, on the one side, and the sun and the moon, on the other).

Proclus points out that such simplicity at the extremes is indeed linked to the question of free choice. More precisely, it refers to the freedom to pursue the best choice. The sages who know what is best pursue nothing else. On the other hand, they who do not think just pursue their simple instinct. In other words, the lofty-minded and the stupid have this in common: the problems of ordinary life do not bother them.

> For if we want to examine these things more deeply, we will observe that in every place those that are at the extremes [*ta akra*: in hierarchical terms] are simpler (*haploustera*) than those in the middle (*tôn mesôn*), which are more complex; so, for example, we see that Nature and Matter are simpler than Body, and the irrational life and intellect are simpler than the rational soul. But, whereas the intellect

> is simpler by being higher in degree of excellence (*kata to kreitton*), the irrational is simple by being lower (*kata to cheiron*); for it lives without deliberate choice (*aproairetôs*) and by conforming to Nature (*kata physin*). If therefore we see that concerning the kinds of motion, both the divine living bodies [i.e. the heavenly bodies] and the inanimate bodies have a simpler motion, but those between wander and move in various and many ways, what is there to wonder at? For the simplicity of the divine movement lies above (*kreitton*) the complexity of the mortals, but the simplicity of the inanimate lies below (*cheiron*). (Proclus, *In Tim.*, 3.328.20–31)

Because Proclus is the first to concentrate on this problem of simplicity in such detail, some modern writers have reached the conclusion that it must link to the importance attached to inanimate bodies in Neo-Platonic theurgy. Their argument goes that since such bodies are simpler than living beings, they must be closer to the simplicity of the One – so it would be easier to contact divinity through material objects. However, such a claim is mistaken, for it rests on a fundamental misunderstanding of Proclus' metaphysics of participation and causation, and of the aim of theurgy.[130]

For all the Neo-Platonists, including Proclus, reunification and reintegration with the One God takes place with the ascent of soul to light (Neo-Platonists often cite as exemplars Plato's *Phaedo* and the *Phaedrus*). Proclus warns over and over again not to let our rational faculty fall into the void of non-being. If theurgists attempted to reach divinity through material objects, their soul would descend to darkness, the underworld Tartarus of unruly matter.[131]

Crucial to this issue is a clear understanding of the independent and dependent participated properties in Proclus' metaphysics, and their role in Iamblichean-style thought and religious practice. The dependent ones are 'irradiations', or 'images', displaying only a shadow of the participated property/entity. The independents, the self-substantiated, are the ones which manifest the property proper. They proceed directly from the original source, the imparticipable, absolute cause for that property. Causation, predication and the chain of being proceed through successive absolute and self-substantiated participated properties/entities, not through mere images of them.[132] Physical entities, such as plants and inanimate beings, bear only the 'symbols' of the self-substantiated. 'Gross' material objects are similar to the One but in a most minimal sense. To find the rungs on the ladder of 'ascension', the Neo-Platonist will look to self-substantiated entities, which have a character in a maximal sense. That is, for example, the celestial bodies, the world soul, the creative intellect. Entities that have a character in a dependent, minimal sense (e.g. mineral bodies, irrational souls, animal intellects) remain far away from the essence of divinity. Nonetheless, like everything in the late Neo-Platonic universe, they contain a spark of divine goodness. For this narrow reason alone, they may be employed as 'symbols' of divinity. Contact with the divine can only be achieved through incorporeal and immaterial means, for only they can truly 'elevate' the soul to God.

So far we have looked at one kind of inverse hierarchy, which takes human nature as the most complex and everything else in the material world as successively less complex. Nevertheless, the following objections can undermine the validity of this. First, the *apparent* simplicity at the lower end of the chain of being hides the continuing multiplication of discrete individuals. Human beings counted individually are fewer than animals, which, in turn, are fewer than plants; and, finally, all living creatures are fewer as individuals than all the inanimate. In other words, the procession from the One to Many is preserved until the end, and there is nothing to upset the unceasing expansion from simplicity to multiplicity. Secondly, inanimate and simple living bodies (e.g. plants), although simpler in constitution than humans and animals, are still with a body and nature. Physical beings may or may not have life, intellect or soul, but they all have a body and its *physis*. Therefore we can never compare them with the entities which are above Nature and Body, that is, the incorporeal and the intelligible.

The last objection leads directly to the second kind of inverted hierarchy which acknowledges that every corporeal being in the physical domain will still be among the most complex entities in the universe. They are subject to the complexities of change, and are acted upon, predicated of both generic and specific characters. Consequently, the inversion will commence with Body itself and continue until the very last grade of indefinite Matter.

Evidence for it may be found in Proclus' tree of Limit and the Unlimited, as we have seen already, and also in some of his references to privations and atomic individuals.[133] However, it is not explicitly documented. This prompted Rosán (*The Philosophy of Proclus*, pp. 190–1) to extrapolate a series from Body to Matter, which he called 'the second class of effects': Body would lie under Intellect as determinate form, pure Quantity under Life as Number, while Atomicity, Privation and Particularity would be successively under the sublevels of Being. This leaves pure Matter to be, correctly, solely the effect of the One. The scheme has attractions, not least for the scale of negation towards Matter. Unlike the previous view of an inverse hierarchy, it concentrates on the minimal traces under each character. That is, we are presented with the descent to simplicity.

However, all forms of a descent to simplicity share the same objection. The minimal species do not reveal what their archetype truly is, any more than a snort and a parting of the lips inform us what laughing is really like. Such accounts tend to obscure Proclus' view of substrates in his metaphysical system. Each generic cause lays its character as a base for the foundation of posterior ones. Every new substance takes its prior as given but creates its specific character from itself: it is self-generated. In effect, as Antony Lloyd once perspicaciously put it, the hypostases are held in their place by their own bootstraps.[134]

10. DESIRE, POETRY AND THEURGY

Proclus starts his Commentary on Plato's *Parmenides* with a prayer and invocation to all the participable levels of divinity, from the choruses of heroes and angels, the celestial gods, to those at the highest intelligible grade. The One is beyond predication, so presumably cannot be appealed to. The invocation is one of several examples of Proclus' sacred poetry, hymns, written in prose. Others are written in Homeric-style verse, which makes it easier for philologists to recognise and collect. From studies on the late Neo-Platonists' interpretive theory, we know that they regarded ancient epic poets, such as Homer and Hesiod, as sources of allegorical truth. Moreover, according to recent research, the Homeric-style seems to be quite common to oracular proverbs, and Proclus held poetry in high regard because it facilitated the beginning of the soul's 'reversion' and 'elevation' to unity.[135] In this light, Proclus' frequent quotations from the Orphic Hymns and the 'Chaldaean' Oracles, and Marinus' report that Proclus recited the Orphics on his deathbed, tell the same story. Poetry, in verse and prose, was not just for stimulating or soothing the spirit, but preparing for the higher life.

Later in the Commentary on the *Parmenides*, Proclus gives a more philosophical account of the journey to God (*In Parm.*, 1071.13–1072.10). The ultimate reality is the single transcendent God. However, the One cannot be the sole form of divinity. If it were, the universe would be left devoid of God's proximate presence. For Neo-Platonists, this would be totally catastrophic. Divinity is not simply a religious entity: it is the foundation of every existent, from cosmic forces to mortal creatures and inanimates, like stones. Unity is the centre of being.

> The distinctive character of the divine powers, radiating downwards, is found in every kind, since each thing obtains from its own immediate cause the distinctive character . . . I mean that if, for example, there be a purifying deity, then purification is to be found in (rational) souls, in animals, in plants, and in stones; . . . the stone partakes of the purifying power only as bodies can; the plant partakes it in a clearer manner, that is, vitally; the animal possesses it in additional form, that of appetite; a rational soul, rationally; an intelligence, intellectively (intuitively); the gods, supra-existentially and in a unified manner . . . All things are suspended from the gods, some irradiated by one god, some by another, and the series downwards to the last orders of being . . . 'all things are full of gods', and from the gods each derives its natural attribute. (Proclus, *El. Th.*, prop. 145)

Thus Proclus sees himself as a philosopher who 'must be a minister of the whole world in common; not befitting to worship at one temple only, either of his home town or his native land' (Marinus, *V. Procli*, 19). As reality is One and Many, so divinity is One and Many. We see Proclus observing the vegetarianism of the Neo-Pythagoreans, the purification rites of the Great Mother and of Isis, and the feasts of the Olympian gods. But he also kept calendars for the worship of gods of religions other than the Hellenic.

> [Proclus] especially refused to eat anything that had life, except when there was an occasion which strongly demanded it; then he would only taste a little meat for the sake of the rite. Every month he purified himself by the rites of the Great Mother, who is zealously followed by the Romans and was before by the Phrygians; and he observed the Egyptian holy days better than the Egyptians themselves . . . In general he observed the holy days of all peoples and of every country appropriately; and he did not make them an excuse, as others do, for idleness or for stuffing one's body, but celebrated them strictly with overnight sleepless prayer-meetings, by singing hymns and by similar activities. This is proved by the content of his Hymns, which include praises not only to the Hellenic gods but also to the god (Zeus) Marnas at Gaza, to Asclepius holding the Lion at Ascalon, to the god Thyandrites (the incense-carrier) who is greatly honoured also by the Arabs, and to Isis who is still honoured at Philae [Upper Egypt, where Isis and Osiris were supposed to be buried], and many others (Marinus, *V. Procli*, 19)

As the One is the cause and goal of the universe, both the visible and the invisible, so the 'ones' are the One multiplied. The unity-henads are the foundation of individual things and classes. In this way, metaphysics, knowledge and faith are united. Reaching the divine is both a scientific and a religious endeavour. Getting to know the nature of things ultimately involves comprehending their essential, characteristic unity. To do so, we have to exercise the appropriate faculties. We sense with our sense-perception, conceptualise with our personal mind, contemplate with intellect, etc. But to grasp the essential unity, we must (as Iamblichus argued against Porphyry and Plotinus) come to touch it with our own unity, for only unities can unite (by this Neo-Platonic analytic). Indeed, for Proclus, every thing is preserved, 'saved' through its unity, which originates in the divine.

Looked at from another perspective, knowledge involves a process of diminishing distinction between perceiver and object. The senses perceive the 'outer' transient and physical qualities, subjective mind works out the more permanent (and therefore more essential) characteristics and patterns. To go further 'in', the subject has to connect even more directly, 'intuitively', with the object. For Proclus, this ultimately entails engaging a level of our being which reaches beyond the definition and limit of cognitive knowledge. At the moment of ultimate intimacy we gain perfect knowledge, but lose our ability to put it in intelligible terms.

The underlying argument for supra-intellectual 'illumination' from the One was already in Plotinus. What Iamblichus added, which the Athenian School developed, was the presence of an essential unity within every soul, and the total fall of soul in the physical realm. The latter meant that the soul cannot arise by its own powers. That is, it cannot come to realise fully its essential divinity, for its true self is beyond the grasp of its ordinary awareness. So, the individual soul with its personal mind cannot march to the higher, deeper realities. It has to be 'lifted up' by divinity itself, aided by enlightened instructors and 'uncontaminated' souls. This 'elevation' (*anagôgê*) is the 'reversion' to the primal, simple principles – in being elevated we move from complexity to simplicity, a reduction (*anagôgê* in Aristotelian logic). By this 'elevation' we also recover 'salvation' (*sôtêria*), the safe-keeping and preservation of our essential nature. To distinguish this experiential journey to God from intellectual theorising about God (*theologia*), Iamblichus emphasised *theourgia*. On Porphyry's evidence, this seems to have had the connotation of magical rite, and the two fell into earnest dispute on its relevance to philosophers. Nevertheless, as Iamblichus himself maintained, and the later Neo-Platonists amplified, philosophers do not think and practise the same as the uneducated. So, for Proclus, faith (*pistis*) is not just the absence of demonstrable argument or truth (*In Tim.*, 1.135.1–3). Inferior faith is the rough opinion which we form from sensory perception (Plato, *Republic*, 509–11), or the subjective conviction instilled in us by persuasive orators. But theurgy leads to a supra-intellectual faith which reaches God.

To Proclus, theurgy is not a short-cut to God (Iamblichus gave the impression that it was open to the uneducated). At the Athenian School, the study of revelatory, sacred writings and induction into theurgy were offered at the very end of the curriculum. All this fits, of course, with the hierarchical ordering of the Neo-Platonic virtues, and the general principle that a soul does not take short-cuts but recovers its self fully by 'reverting' through the layers of being in a maximal sense. Proclus often cautions that we must not allow our imagination to run riot, but exercise our mind with logic and science before we are ready to attempt unification with the One.

> Progressing serenely and unconstrained through these virtues as if they were degrees of some initiation (*bathmon tina telestikon*), [Proclus] arrived at the major ones and to those above them led by his right nature and scientific training (*agôgê epistêmonikê*). For after being purified and rising above the world of change, he looked down on 'the many who carry the rod of authority' and became one of 'the few bacchants who carry the wand of inspiration' (Plato, *Phaedo* 69). He saw directly with his eyes the blessed visions of reality, no longer obtaining knowledge through the detail and demonstration of discursive reasoning, but looking at it as if by direct vision and by the simple conceptions of the intellective activities. Thus he acquired both the paradigms in the divine Intellect and the virtue which can no longer be called practical reasoning (*phronêsis*) in the strict sense but rather wisdom, or by another even more reverent name. (Marinus, *V. Procli*, ch. 22)

Rising to God entails 'returning' to the One, which 'remains'. Proclus distinguishes three approaches or stages: Love (*erôs*), Truth (*alêtheia*) and Faith (*pistis*). They seem to derive from Iamblichus, although the three and Hope are in Porphyry's *Letter to Marcella* 24. At any rate, because the Neo-Platonic universe is arranged in 'planes' or 'orders', each of the three paths contains different modes. Love, Truth and Faith are conditioned, modified by the appropriate level. The paths to God change according to the landscape of each level. This, I submit, is the key to understanding why Proclus appears to give different accounts of theurgy. It is not only theurgy that changes as its practitioner moves from physical to spiritual levels, but also love changes from physical to spiritual, and knowledge changes from sense-perception to contemplation.

> Three are the characteristic aggregate properties which constitute the divine nature, which spread to all the divine classes, good (*agathotês*), wisdom (*sophia*) and beauty (*kallos*). Three, therefore, are those which are so characterised and which join the inferior classes with the principal. They penetrate through all the divine cosmic orders; they are faith (*pistis*), truth (*alêtheia*) and love (*erôs*). Through them everything is saved and joined to the primary causes, some through love's madness (*erôtikês manias*), others through divine philosophy (*theias philosophias*) and others again through theurgic power (*theourigikês dynameôs*). (Proclus, *Plat. Theol.*, 1.112.25–113.6)

> The elevation (*anodos*) of all intellective summits towards the inexpressible (*aphrastous*) and intellective powers is affected through the connective gods and by the theurgists. As the gods here (the intelligible-intellective) indeed connect to the primal intelligibles, which Plato no longer explained with words; for the connection to them is ineffable (*arrhêtos*) and takes place through ineffables, indeed, exactly as the theurgists believe, the mystical union to the intelligible and primal-working causes takes place through this (intelligible-intellective) order. Therefore the way of elevation is the same with us [Platonists], and through this is the most faithful way of theurgical elevation. (Proclus, *Plat. Theol.*, 4.28.22–29.5)

> For I at least think that Plato sufficiently shows to those who are not casual listeners these three elevatory causes, that is, erotic love, truth and faith. For what is the connection to Beauty, but love? Where is the 'field of truth' than in this place (i.e. truth)? What is the cause of this ineffable initiation (*myesis*) except that faith? For on the whole the initiation does not happen through intellection (*noêseôs*) and judgement (*kriseôs*), but through the silence (*sigês*) which is unifying and is superior to every cognitive activity. Faith imparts this, which is in the ineffable and unknown gods, and is established in the universal souls and in our own. (Proclus, *Plat. Theol.*, 4.31.6–16)

Ascent with Love is open to all. This is not merely a liking or fondness for something, but *erôs*, a strong desire, a 'madness', to unite completely with the object of one's love. Prompted by Plato's account of graded love in the *Phaedrus* and the *Symposium*, the (Neo-)Platonist sees it as a means for the soul to lift. Love leads to the beholding of Beauty itself, the ideal which culminates in the Good. This is the path of the goddess Aphrodite to the 'centre', the unity.

The Neo-Platonist philosopher has two further paths: the contemplative and the operative, that of philosophy and of theurgy. Soul absorbs sense-perceptions, and at the base level of thinking soul forms belief or opinion (*doxa*). It is a state of half-knowledge, where base desires and imaginations mingle with thought. Next 'up' is discursive reasoning (*dianoia*). It covers a broad range of thought-processes leading to understanding, the highest being that of dialectical reasoning. At the intelligible levels, thought identifies with reality. The conceptual separations of discursive reasoning dissolve. This is the state of intuitive, direct knowing (*noêsis*) of Truth. It is Athena's and Hermes' path to the prime principle.

Here are extracts from three of Proclus' hymns to the deities of light, love and wisdom. The translations are special, because they were done by Thomas Taylor (1758–1835), whose audience included many of the English Romantics.

Proclus' *Hymn to the Sun*
Hear Golden Titan! king of mental fire
Ruler of light; to thee supreme belongs
The splendid key of life's prolific fount;
And from on high thou pour'st harmonic streams
In rich abundance into matter's many worlds.
Hear! for high rais'd above th' aethereal plains,
And in the world's bright middle orb thou reign'st
Whilst all things by thy sov'reign power are fill'd
With mind-exciting, providential care.
The starry fires surround thy vig'rous fire
And ever in unweary'd, ceaseless dance,
O'er earth wide-bosom'd, vivid dew diffuse.
By thy perpetual and repeated course
The hours and seasons in succession rise;
And hostile elements their conflicts cease,
Soon as they view thy awful beams, great king,
From deity ineffable and secret born . . .

Proclus' *Hymn to Aphrodite*
A celebrated royal fount I sing,
From foam begotten, and of Love's the spring,
Those winged, deathless powers, whose gen'ral sway
In diff'rent modes all mortal races obey.
With mental darts some pierce the god-like soul,
And freedom rouse unconscious in control;

That anxious hence the Centre to explore
Which leads on high from matter's stormy shore,
The ardent soul may mediate her flight,
And view their mother's palaces of light . . .
O venerable goddess! hear my prayer,
For nought escapes thine universal ear:
Whether t' embrace the mighty heav'n is thine,
And send the world from thence a soul divine;
Or whether, seated in th' aethereal plane
Above these seven-fold starry orbs you reign,
Imparting to our ties, with bounteous mind,
A power untam'd, a vigour unconfin'd;-
Hear me, O goddess, and my life defend,
With labours sad, and anxious for their end;
Transfix my soul with darts of holy fire,
And avert the flames of base desire.

Proclus' *Hymn to Athena*
Daughter of aegis-bearing Zeus, divine,
Propitious to thy vot'ries prayer incline;
From thy great father's fount supremely bright,
Like fire resounding goddess, hear, to whom belong
A manly mind, and power to tame the strong!
O, sprung from matchless might, with joyful mind
Accept this hymn; benevolent and kind!
The holy gates of wisdom by thy hand
Are wide unfolded; and the daring band
Of earth-born Giants, that in impious fight
Strove with thy fire, were vanquish'd by thy might . . .
Lands are belov'd by thee to learning prone,
And Athens, O Athena, is thy own!
Great goddess, hear! and on my own dark'ned mind
Pour thy pure light in measure unconfin'd;
That sacred light, O all-protecting Queen,
Which beams eternal from thy face serene:
My soul, while wand'ring on earth, inspire
With thy own blessed and impulsive fire . . .
Give love, give wisdom, and a power to love
Incessant tending to the realms above . . .
Hear me, and save (for power is all thy own)
A soul desirous to be thine alone.

Neo-Platonic theurgy involves the unity, the 'flower of the soul'. Theurgy is also called the *hieratic* art, namely the priestly art. Theurgy translates primarily as divine-working; it can also mean operating on the gods. In the Neo-Platonic universe, human beings, like every being, are participants in the divine. To put it closer to the Neo-Platonic realist conception, unity and pure being constitute what is truly real in things, so the rest of the levels, and the entity as a whole, are possessed by unity and pure being. Theurgy, therefore, affords an additional power, or more precisely an activity. The theurgist-priests can share some of the creative power and channel it to good deeds for their fellow human beings, and also to elevate their own soul. To make it perhaps a little clearer, it seems that Neo-Platonic contemplation and theurgy have a relationship akin to that between theoretical and experimental science. Probably because of the active experiential ingredient, the late Neo-Platonists place the theurgical virtue above the intellectual.

Progress on the theurgic path is by 'degrees of initiation', like the grades of education. Select students would be taught the 'ineffable mystagogy'.[136] The main sources for it are the Orphic Hymns, Pythagoras' Golden Verses and Exhortations, and the Chaldaean Oracles or Proverbs. Collectively they constitute the god-given word, which originated beyond time and has been handed down to suitable persons, exemplified in the 'golden chain' of succession (of which Pythagoras and Plato were supposedly part). Combined with the interpretation of Plato, they are intended to demonstrate the 'harmony' of inspired thought.

Central to theurgy is the ascension or elevation (*anagôgê*) of the soul.[137] In the parlance of the 'Chaldaean' Oracles, it is Hecate's path to the ineffable divinity. At the lower level, theurgy is equivalent to natural and spirit magic and miraculous healing. The operator finds the affinities which link causes and effects in the universe and manipulates them to achieve the desired effect. Here we find Proclus' concept of series coming to the fore. A certain property distinguishes and links many participant entities on different levels. Operating on the one end, the physical, resonates through the whole of the series and affects the power that is at its head. It is through these 'series' that terrestrial phenomena, such as rain and earthquakes, are linked to cosmic forces. Knowledge of them can produce appropriate remedies or preventions. Proclus is said to have brought about rain during a drought and produced means for earthquake prevention, both as examples of his theurgic abilities (Marinus, *V. Procli*, 28). However, the 'series' also underlie occult manifestations. Divination, prophecy and evocation of spirits, gods or the dead, are some of the other examples of Proclus' theurgy.

So meteorology, geology, occultism and healing are set side by side as demonstrations of Proclus' theurgic virtue. But the mode of exercise of theurgy changes as it rises to higher levels, and by definition transcends the subjective concerns of the physical world, and soul flies, as it were, outside. Magic becomes spiritual rather than ritual. The theurgist is now operating with the forces of the intelligible realms. Manipulating the 'symbols' gives way to working with the Real thing. Likewise, incantation gives way to pure invocation and ultimately to theurgic prayer. At the pinnacle of the operation, the priest-theurgist entrusts the soul's 'one' to the One itself. Through this leap of Faith, the 'one' unites cognitively with the One.

> Let us not be persuaded that empty downpours of words and phantasmagoric rites artificially adorned will impress the one who is master of true discourse; for God loves the simple, unadorned beauty. Let us consecrate this hymn to God; let us leave behind this flowing, transient substance; let us come to the true purpose (*alêthê skopon*), to become exactly like Him. Let us know the Master, let us love the Father, let us obey the call. Let us run to the hot, let us escape from the cold. Let us become fire, let us travel through fire. We have a free way to the Ascent (*aneleusin*). The Father will guide us, unfolding the ways of fire; let us not flow with the lowly stream from Forgetfulness (*ek lêthês*). (Proclus, *On the Chaldaean Philosophy*, frg. 2; on Proclus' 'fire song' in prose, see also H. Lewy, *Chaldaean Oracles and Theurgy*, Exc. IX)

> My soul has arrived breathing out the force of fire
> And my mind extends writhing as flame to the aether
> Awaken'd darts upwards, the circles rich with stars roar with
>   immortality.
>   (Proclus, theurgic Epigrams, in Marinus, *V. Procli*, 28)

> The most divine thing in us is the 'one' in us, which Socrates called the illumination of the soul [Plato, *Rep.* 508, 540a7], just as he called truth itself light [*Rep.* 509]. This illumination is our individual light, and so, if it is not impious to say this, here also like is apprehensible by like: as the sense-perceived is by sense-perception, the matter of opinion by opinion, the matter scientific by science, so by the 'one' in ourselves we apprehend the One, which by the brightness of its light is the cause of all things. (Proclus, *In Parm.*, 48 Klibansky)

Root-Being and Unity cannot be captured by any words. They cannot be appropriated, for none of the human measures can comprehend them, nor can references locate them. So the Neo-Platonist is left with silence. Porphyry, Iamblichus and Proclus alike arrived at the 'profound silence', not only of philosophy but also of religion. Indeed, many quietist and inner-light movements were to be influenced by Neo-Platonism. In summary, it is important to note that despite the quarrel between Porphyry and theurgic-minded Neo-Platonists, they all agreed both on the value of reason and the limits of knowledge.

> The love of the One is inextinguishable. This is indeed why this love is real, even though the One is incomprehensible and unknown. But consciousness labours and falls short when it encounters the unknown. So silent understanding comes before that which is put in language, and desire comes before understanding, before what is inexpressible as well as before what is analysable. (Proclus, *In Parm.*, 54.21–7 Klibansky)

> Deliberation is the mark of thought's encounter with difficulties: this is why Nature produces, and cognitive knowledge says what it says, without deliberation . . . These dialectical activities are the preparation for the strain towards the One, but are not themselves the strain. Or rather, not only must it be eliminated, but the strain as well. Finally, when she has completed the course, the soul may rightly remain with the One. Having become single and alone in itself, she will choose only the simply One . . . It is with silence, then, that [Parmenides] brings to completion the study of the One. (Proclus, *In Parm.*, 76 Klibansky)

> If the Word (*logos*) which comes-unto-light is named [by the Chaldaean Oracle] as more ineffable, it is necessary that prior to the Word there should be Silence (*sigên*) which substantiates the Word, and prior to everything holy comes the cause which makes them divine . . . As the beings posterior to the intelligibles are the words of the intelligibles, so the Word which is in them, hypostasised from another more ineffable unity, is the Word prior to the silence of the intelligibles, that is, the silence of the silent intelligibles. Perhaps, therefore, this flower of the intellect (*nou anthos*) is not identical with the flower of the whole of our soul (*psychês anthos*); but this, the flower of the intellect, is the most unified of our intellective life, but the other, the flower of soul, is that of all of our psychic faculties, which are many. For we are not intellect alone but also discursive reason and opinion and attention

> and deliberate choice, and prior to all these faculties we are one essence and many . . . But the 'one' which gathers all the soul's faculties takes us to that which alone is beyond (*epekeina*) all being; It unifies all that is in us. By planting (*errhizôthêmen*) our essential roots in It, even when we proceed away from It, we will not separate ourselves from our Cause. (Proclus, *On the Chaldaean Philosophy*, frg. 4; cf. *El. Th.*, prop. 35)

NOTES

1. Proclus, *In Parm.*, 927.20. Cf. Plato, *Rep.* VII 518bc, on education turning soul to the Good.
2. Proclus, *In Tim.*, 3.9.22; 1.6.22.
3. Saffrey and Westerink, 'Les exégèses de la Lettre II', in *Proclus. Théologie.* 2. pp. xx–lix.
4. On the Neo-Platonic exegesis of Aristotle and Plato, and the Neo-Platonic curriculum, see L. G. Westerink, *Anonymous Prolegomena to Platonic Philosophy* (Amsterdam, 1962; Paris, 1990) and B. D. Larsen, *Jamblique de Chalcis* (1972), chs 5–6.
5. 'Most critical' (*kritikôtatos*) Syrianus: Elias, *In Categ.*, CAG 8.1. (applied to literary critics).
6. Elias, *In Categ.*, 107.23–7; Ammonius, *In Categ.*, 7.6–14; and see the *Anonymous Prolegomena.*
7. On contact with object, and knowledge as 'perception': W. Beierwaltes, 'Das Problem der Erkenntnis bei Proklos', in *De Jamblique à Proclus*, pp. 153–83, and important discussion on the henads.
8. This, and the absence of any specific examination of the 'divine' celestial bodies, induced the nineteenth-century Thomas Taylor to write a seventh book of the *Platonic Theology* as Proclus might have written it, based on *The Commentary on the Timaeus.*
9. Plato, *Tim.* 34b, and Proclus, *In Tim.*, 3.102–8.
10. On *epheton*, etc.; Proclus, *El. Th.*, prop. 8 (terms have Platonic and Aristotelian origins).
11. 'Reversion': A. C. Lloyd, 'Procession and division in Proclus', in *Soul and the Structure of Being*, ed. Blumenthal and Lloyd, pp. 33–4. 'Reversion', 'return', 'inclination': Lloyd, *Anatomy of Neoplatonism*, pp. 126–30.
12. Iamblichus' principle of knowing: Lloyd, *Anatomy of Neoplatonism*, pp. 154–8.
13. 'Partial' soul: Proclus, *In Tim.*, 2.228; as alloy mixture of mortal and immortal, *In Tim.*, 3.321, 246ff. Studies of Proclus on the human soul can be found in Blumenthal, for example 'Some problems about Body and Soul in later pagan Neoplatonism', *Jahrbuch für Antike und Christentum* 10 (1983), 75–84; Steel, *Changing Self*: cf. Rosán, *Philosophy of Proclus*, pp. 194–216.
14. Proclus, *In Tim.*, 3.196, 230, 3.110–12; but also mermaids, 2.208.10, and dragons, 2.202.25.
15. As living things, *In Tim.*, 3.196, 239; cf. *Plat. Theol.*, 3.22–5.
16. On metals: Proclus. *In Tim.*, 1.43, 3.321, and the Proclus fragment in Olympiodorus, *In Meteor.*, 266–7. The 'solidifications' theory is owed, as Olympiodorus points out, to both Plato (solidification of the Water Element, *Tim.*, 59ab f.) and Aristotle (solidification of vapour, the moist of the two exhalations, *Meteor.* 3.6, 378a ff.). The reference to being 'planted', or seeded, can most probably be traced to the Stoic concept of seed-principles. However, in both cases the causal role of the celestial bodies is central, unlike in the original theories. See R. Halleux, *Le problème des métaux dans la science antique* (Liege, 1974), with a section on the astrology and theurgy, pp. 149–60, where Proclus' *In Tim.*, 1.43 and the fragment in Olympiodorus are discussed extensively. See also R. P. Multhauf, *The Origins of Chemistry* (London, 1966), and F. S. Taylor, 'A survey of Greek alchemy', *Journal of Hellenic Studies* 50 (1930), 109–39.
17. Proclus, *In Tim.*, 3.167.25–30; cf. *El. Th.*, prop. 139, celestial beings are the last divinities.
18. For the status of the *daimones* in Proclus, see for example *In Tim.*, 3.152–61, 3.165–7; *In Rep.*, 2.71–2; *In Alc.*, 31–2, 40, 90. In Neo-Platonism, there was a trend towards a philosophical exegesis as 'principles', 'powers' and 'intermediaries': cf. Plotinus, *Enn.* 3.4, with Iamblichus, *Myster.* 1.6, 9.6–9. Wider Greek belief in *daimones*; see Proclus, *In Tim.*, 3.258; Plato, *Phaedo*

107d, *Rep.* 382d, *Phaedrus* 271; Aristotle, *De Anima*, 2.3: 414b19. ref. to beings more worthy (*timiôteron*) than man.

19. For the tripartite division of the daimonic class, see *In Tim.*, 3.165. Cf. Iamblichus' fourfold division, three corresponding to the angels, daimons and heroes, and one to the *achrantoi* souls; see Dillon, *Iamblichi Fragmenta*, pp. 243–4.
20. Proclus, *In Tim.*, 3.259.10–30, cf. 1.131–2. 'Bodhisattvas': Dillon. *Iamblichi Fragmenta*, pp. 243–4; Rosán, *Philosophy of Proclus*, p. 180.
21. Sublunaries are mixed up, in addition to being a mixture of limit–unlimited, for example *In Tim.*, 1.410.11–19.
22. Cf. Proclus, *In Tim.*, 2.26, with Plato, *Tim.* 49b ff., and the doctrine of Becoming. For the aphorism 'Everything is in a state of flux', attributed to Heraclitus, see Simplicius, *In Phys.*, 1313.
23. See, for example, Proclus, *In Tim.*, 1.140, 163–4, 392; *In Rep.*, 2.266, 2.303–4; *In Parm.*, 916. For the important concept of suitability, see E. R. Dodds, *Proclus Elements*, pp. 344–5. Sambursky, 'Conceptual developments and modes of explanation in later Greek scientific thought', in *Scientific Change*, ed. A. C. Crombie, pp. 61–78, especially pp. 104–9; criticism by G. E. L. Owen, in ibid., pp. 93–102, especially pp. 97–8. Further criticism: R. B. Todd. '*Epitedeiotês* in philosophical literature: towards an analysis', *Acta Classica* 15 (1972), 25–35, who traces Philoponus' usage of 'fitness' to non-technical terminology, or at least to a technical usage supplementary to the Aristotelian potentiality, not as an alternative. In relation to the Stoic theory of causation, see Sorabji, *NCB*, pp. 64–5, 78–9. 'Fitness', or 'disposition', links also to the development of occasionalism (in Islamic philosophy, Ghazali, eleventh century).
24. Factors are subject to change: Proclus, *In Tim.*, 1.145; see also Dodds, *The Greeks and the Irrational*, section on theurgy, pp. 291–311.
25. *El. Th.*, prop. 72; ibid. for Matter as the substrate of all; also cf. *In Parm.*, 1123, where Body is called 'the substrate of the universe' insofar as it refers to the universe in actual being.
26. For this reason, Proclus' theory of procession has been accused of being too materialistic, because the same *dynamis* produces the intelligible, the psychical and the material worlds: M. L. von Franz, *Number and Time* (London, 1974), p. 82, note 55 (in the context of Jungian thought).
27. Neo-Platonic soul-vehicle: Finamore, *Iamblichus and the Theory of the Vehicle of the Soul* (1985). The first academic examination of the Neo-Platonic vehicle was by R. C. Kissling. 'The ochema-pneuma of the Neo-Platonists and the *de Insomniis* of Synesius of Cyrene'. *American Journal of Philology* 43 (1922), 318–30. Dodds' synoptic study of 'The astral body in Neoplatonism', appendix of *Proclus Elements*, traces its development from the various notions of 'subtle' bodies, including Galen's, to Proclus and to the Cambridge Platonists, especially Cudworth. On Proclus' vehicle, there is an important article by J. Trouillard, 'Réflexions sur l'ochêma dans les *Eléments de Théologie* de Proclus', *Revue des Etudes Grecques* 70 (1957), 102–7, where he points out the links with the theory of matter.
28. According to Dodds, *Proclus Elements*, p. 313, n. 4.
29. For example, Proclus, *El. Th.*, prop. 209.
30. Vehicles making soul 'citizen of the cosmos' (*politidas tou pantos*), 'citizen of generation': *In Tim.*, 3.266.6, 297.4, 298.29.
31. Studies include: R. Sorabji, *Time, Creation and the Continuum*, especially Part I: *Matter, Space and Motion*, especially chs 7 and 12. See also P. Plass, 'The metaphysical aspect of tenses in Proclus', *International Philosophical Quarterly*, 23.2 (1993), 143–51; W. O'Neill, 'Time and eternity in Proclus', *Phronesis*, 7 (1962), 161–5; S. Sambursky and S. Pines, *The Concept of Time in Late Neoplatonism*: S. Sambursky, *The Concept of Place in Late Neoplatonism*: idem, *The Physical World of Late Antiquity*, section on space and time; P. Hoffmann, 'Iamblique exégète du Pythagoricien Archytas, trois originalités d'une doctrine du temps', *Les Études Philosophiques* (1980), pp. 302–23.
32. Proclus, *In Tim.*, 1.161f. 'Active' space, Iamblichus' theory: see Simplicius, *In Phys.*, 639–40. *In Categ.*, 361–4, also mentioned in Proclus, *In Tim.*, 1.164.22–5; it is supposed to be an 'incorporeal cause' which sustains bodies with life and contains all extension. In Proclean terms, Space may be regarded as active in its capacity as the *organon* of the world soul. However, the true incorporeal cause and power (*dynamis*) is the world soul itself, rather than the pure corporeal extension.

33. *Plat. Theol.*, 5.73–5; *In Tim.*, 3.27.53–4; cf. Simplicius, *In Phys.*, 795.4–26.
34. Chronos = Kronos; see *In Tim.*, 3.187.21; *In Crat.*, 59.15. Proclus says that according to the Orphics, the first cause of all is called Chronos (Time), being *almost (schedon)* the same in name as Kronos. See also the previous section on Eternity at the level of Being.
35. Proclus, *El. Th.*, prop. 191.
36. Confusion of causal with temporal order: Proclus, *In Parm.*, 719.5–10; see Plass, 'The metaphysical aspect of tenses in Proclus'.
37. For the kinds and subdivisions of Time, see *In Tim.*, 3.19–28ff., 32.10; also *El. Th.*, props 51, 53–5.
38. See also E. R. Dodds, *Proclus Elements*, pp. 227–9 notes; further, Proclus, *El. Th.*, props 48, 49, 94, 198.
39. For these subdivisions, see *In Tim.*, 3.53ff. In *In Tim.*, 2.100.4, Proclus describes the cosmos as *enchronos*, as time is *egkosmios.*
40. *In Tim.*, 2.289–90; *In Rep.*, 2.11; cf. Proclus, *In Phys.*, 30, def. 13, 'Time is the number *(arithmos)* of motion of the celestial bodies': cf. Aristotle, *Cael.* 279a 15, 'time is the number of motion'. The emphasis on the celestial bodies derives from Plato's *Timaeus.*
41. Just as the world soul is practically the encosmic monad of souls, so the world soul is the active cause, resident in the world-space and time.
42. For the description of Time as spiral, see section 5, on the world soul. Proclus encompasses both descriptions in the term 'cyclo-spiral' (*kykloelikton*); *In Tim.*, 3.20.25. It means literally 'twisting in a circular fashion'. It may be translated also as 'revolving in a circle' (see *Orphica Hymni*, ed. E. Abel. 8.11: *Chaldaean Oracles*, fr. 199), but the first rendition brings out better the religious and astronomical background.
43. *Spermatikoi logoi*: Proclus, *In Tim.*, 1.143.17–18, 3.188.5–10, 3.191.7.
44. Nature complementary to Soul: see Saffrey and Westerink, *Proclus. Théologie*, 1, pp. lxvi–lxvii. Nature and Body, *sômatikê physis* = nature: Proclus, *El. Th.*, props 21 and 111.
45. Nature as a lower soul in Plotinus: Wallis, *Neoplatonism*, 52, 67. 'Seminal', or rather, 'Forming' reason-principles (*poiountes logoi*) occur also in Plotinus, although they are said to be in the Soul and act as causes of movement: *Enn.* 2.3.16–17, 5.3.10, 4.3.15. Strictly speaking, they exist in the Nature aspect of his world soul.
46. A list would include Beutler (in Pauly and Wissowa (eds)), Dodds, Rosán and Wallis. J. M. P. Lowry, *The Logical Principles of Proclus' Stoicheiôsis Theologikê as Ground of the Cosmos* (Amsterdam, 1980), recognised that something is amiss, but in his diagram of the levels of being and classes of divine *henades* (pp. 102–3) he just left a question-mark in the place specified by the 'liberated' class.
47. Proclus, *Plat. Theol.*, 6 pp. 403–4 (Portus); cf. *El. Th.*, props 209, 186, 64, 78–82, for the various attributes of the 'inseparable' and 'nature'. See also *In Tim.*, 1.79.5–6, 2.146.4–9, 3.241.25–8. Demiurge, Necessity and Nature: *Plat. Theol.*, 5 ch. 31. Necessity, Fate and the 'liberated' order: *Plat. Theol.*, 6 p. 404ff. (Portus); *In Rep.*, 2.94. Another confirmation is via the personified Hephaestus.
48. The three Fates and tenses: see Plass. 'The metaphysical aspect of tenses in Proclus', especially pp. 143–7.
49. Proclus, *Plat. Theol.*, 6 pp. 403–4 (Portus); also *In Tim.*, 1.142ff., 2.281.20–3, 3.241.26.
50. *Psychê* and the noetic realm: Plato, *Phaedo* 65–7, *Rep.* 4.435–44, *Tim.* 69–72; as the principle of self-motion, *Phaedrus* 245–9, *Laws* X 894–5, *Tim.* 89. Both notions can be traced further than Plato: the principle of animation is Presocratic, and the immortal, intellective principle in body seems to have been Pythagorean, although Anaxagoras appears to have combined both; see Aristotle, *De Anima*, 1.1–5.
51. Soul as the principle of motion, as opposed to Nature (Aristotle), refers to a purposeful kind of motion; for example, Proclus, *In Tim.*, 3.119; *In Rep.*, 2.206.10–15, where *Anagkê*, the Necessity of Nature, is said to pertain to bodies, not to self-moved realities (*autokinêtai hypostaseis*).
52. Proclus, *El. Th.*, props 197, 191, 186–200; *In Parm.*, 1004–7, one of the most important references on Proclus' theory of soul. Cf. Plotinus, *Enn.* 5.2 and, more generally, 4, especially 1–2; on the 'leading' principle, 4.3.17–23, 4.7.
53. Reincarnation: beastly not in body but in life: Proclus, *In Tim.*, 3.296.12–13.

54. Images in personal mind: Proclus, *In Eucl.*, 50–2.
55. Proclus, *In Eucl.*, 12.10–13.26.
56. Soul not a tabula rasa: A. Segonds (ed.), *Proclus sur le premier Alcibiade de Platon*, 2, p. 435 (complementary notes); C. Steel. *The Changing Self*, p. 143ff., especially pp. 148–9.
57. An example of Presocratic 'world soul' is Anaximenes' pneuma which pervades the cosmos like the air-soul in humans, for example *Fragmente Vorsokratiker*, B2, I 95,18. On Plato's soul for the world, see F. M. Cornford, *Plato's Cosmology* (London, 1937), pp. 57–96; A. E. Taylor, *A Commentary on Plato's Timaeus*, 105–36; T. J. Tracy, *Physiological Theory and the Doctrine of the Mean in Plato and Aristotle* (The Hague, 1969), pp. 77–96. For Plotinus, see A. H. Armstrong, especially Part III of the *Cambridge History of Later Greek and Early Medieval Philosophy*, main references Plotinus, *Enn.* 5.2, 2.2, and soul in general, *Enn.* 4.
58. Imparticipable, supracosmic Soul vs the participated world soul: cf. *El. Th.*, prop. 200; *In Tim.*, 2.285, 289: see also Dodds, *Proclus Elements*, pp. 298 n. 3, 302 n. 2.
59. World soul, world Intellect and world body: Proclus, *In Tim.*, 1.402–6, 3.2–3, etc.
60. On the lemma of the proportion theory of the world soul in Plato. *Timaeus*, see E. G. McClain, *The Pythagorean Plato* (1978), with a detailed account of Proclus' solution.
61. Proclus, *In Rep.*, 2.143.21–4; *In Tim.*, 2.247, 255–7. Is this the 'cross the heart'? On the Chaldaean and other non-Christian background of the cross, see Lewy, *Chaldaean Oracles and Theurgy*, pp. 252–4 and 270 notes; cf. Saffrey and Westerink, *Proclus. Théologie Platonicienne*, 2, p. xl.
62. Helix as a symbol: spiralling snake symbolism of Hecate, the deity identified with the world soul: see Lewy, ibid. pp. 92, 269–73 (use of cross in initiation), 353–66, and S. Ronan, *The Goddess Hekate* (Hastings, 1992). For spiral symbolism in Mithraism, see L. A. Campbell, *Mithraic Iconography and Ideology* (1968). On the winding of the stars as a serpent, see Lewy, ibid., p. 293 n. 131. On an evil as well as a good world soul, see Plato, *Laws* X 896e; see Dillon, *Middle Platonists*, pp. 202–4, 375, for the developments of this notion. On Proclus and his view of previous Platonists on this problem, *In Tim.*, 1.282ff. For Proclus, the 'irrational' part belongs properly to Nature. Time, the planets and helix: *In Tim.*, 3.20, 40, 80.
63. Proclus' 'Three Creators' correspond to the tripartite division in Neo-Platonic exegesis. They are of the Soul: Proclus, *In Tim.*, 1.446, 3.241. For the tripartite division of the universe, cf. *In Tim.*, 2.56.
64. Dissimilarity: Proclus, *Plat. Theol.*, 6 pp. 347–50, 384–6 (Portus).
65. Cf. *El. Th.*, prop. 57 Cor. (and Dodds' comment, ibid. p. 232). *Plat. Theol.*, 5 ch. 1 reference to the intelligible-intellective, and the intellective-formal.
66. Scope distinction: De Rijk, 'Causation and participation in Proclus: the pivotal role of scope distinction in his metaphysics', in *On Proclus and his Influence in Medieval Philosophy*, ed. Bos and Meijer – however, application of it in the case of Intellect is not mentioned.
67. On the Intellect in late Neo-Platonism, see Merlan, Dillon. See also the reference on 'intelligence': Wallis, *Neoplatonism*, pp. 65–7, 88–9, 143–4. Proclus calls the efficient 'demiourgikon': see for example *In Tim.*, 1.4, 1.5.
68. It is almost certain that the 'noetic hebdomad' had been established by Iamblichus: see Dillon, *Iamblichi Fragmenta*, p. 37 on Proclus' *In Tim.*, 1.308.18f., where he discusses the seven members; see also 306–9 and 417–19. But cf. Proclus, *Plat. Theol.*, 5 ch. 2: the noetic is the first of seven hebdomads, including the seven planets.
69. On the structure of Intellect in general, *Plat. Theol.*, 5 ch. 2; the Fathers, ch. 3; Kronos, ch. 5; Rhea, ch. 11 (her 'Chaldaean' equivalent is Hecate); Zeus, chs 12–32; the 'uncontaminated' are identified with the Curetes, and the 'monad of differentiation', chs 36–40, whose Chaldaean equivalent is the 'Hymen' (*hypezôkos hymên*) separating the intelligibles from the material world.
70. Proclus, *Plat. Theol.*, 5.36.8–37.21.
71. *Thea.* extracted from many Proclean references (see *Or. Chald.*, fr. 54); see also fr. 50–2, 56. Strictly, she corresponds to Hecate, the Goddess of Mysteries; but as H. Lewy pointed out, *Chaldaean Oracles and Theurgy*, p. 84, n. 66, Proclus has adjusted the Chaldaean scheme to fit the Hellenic theology. Rhea's 'life-giving power' is controlled by the Formal nature of the order as a whole, which imparts schema and bounds: *Plat. Theol.*, 5.8–9.
72. Creator is efficient, final and formal cause: Proclus, *Plat. Theol.*, 5 ch. 20; 5.55; 5.61.10–15: *In Tim.*, 1.266.25–30.

73. For the development of the Demiurge of Plato's *Timaeus* as a lower God, see Dillon, *Middle Platonists*, pp. 7, 283–4, 299–300, 366–76; *Iamblichi Fragmenta*, pp. 37–9; 'The concept of two intellects'. Gnosticism in general: K. Rudolph, *Gnosis. The Nature and History of Gnosticism* (Edinburgh, 1984). For the Gnostic Demiurge, see Dillon, *Middle Platonists*, pp. 385–9; H. Jonas, *The Gnostic Religion* (Boston, 1963), pp. 42–4, 96–7, 141–4; J. Zandee, *The Terminology of Plotinus and of Some Gnostic Writings*, Institut historique et archéologique néerlandais de Stanboul 11 (1961), pp. 24–6. On the fundamental difference between Neo-Platonism and Gnosticism, see A. H. Armstrong, J. Dillon, in *Neoplatonism and Gnosticism*, ed. Wallis (Albany, 1992). The two Gods, the Superior and the Creator, are also present in the *Hermetica*, although the imperfections of the latter are not held to be evil, and they are not antagonistic; see A. D. Nock and A. J. Festugière, *Corpus Hermeticum*, tract I; Dillon, *Middle Platonists*, pp. 389–92; H. Jonas, ibid., pp. 148–73; G. van Moorsel, *The Mysteries of Hermes Trismegistus* (Utrecht, 1955), remarks that because of this difference with Gnosticism it would not do to mention both in the same breath.
74. Creation from Intellect: Proclus, *El. Th.*, props 174, 176. See Dodds' notes for appeal to Aristotle; Lloyd, *Anatomy of Neoplatonism*, p. 182ff.
75. Proclus, *The Eighteen Arguments in Favour of the Eternity of the World, Against the Christians*, in Philoponus, *Contra Proclum*, especially Arguments 1, 3, 15, 18. Cf. Proclus, *In Tim.*, 2.281.1–2, commenting on Plato, *Tim.* 36e, says that the term 'after', in the account of the creation of Soul and Body by the Demiurge, has sequential not temporal significance (*mê chronikên hypolabês alla taxeôs sêmantikên*). See also Sorabji, *TCT*, Part III. Modern cosmologists such as Stephen Hawking have now come to the same conclusion: temporal 'before' and 'after' for the universe as a whole is not a valid notion.
76. Intellective level characterised by distinction: Proclus, *El. Th.*, prop. 176, 'all the intellective Forms are one in another in a unified manner (*hênômenôs*) and each is separated in a distinguished fashion (*diakekrimenôs*)'; also *Plat. Theol.*, 4.88.22; 5.101.22; 5.111.9.
77. Forms on different levels: *El. Th.*, props 176–7, *In Parm.*, 969–71.
78. Neither Lloyd, *Anatomy*. p. 166, 'Non-propositional thought in Plotinus', *Phronesis*, 31 (1986), 158–65, nor Sorabji. *TCT*. pp. 152–6, has noted these important features of non-discursive Intellect in Proclus.
79. What has and has not got a Form: Proclus. *In Parm.*, 816ff.
80. The hypostasis of Life seems to have been originated and developed by Proclus; see Dodds, *Proclus Elements*. pp. 282, 252–3; Saffrey and Westerink, *Proclus. Théologie Platonicienne*, 4, p. xxxvi.
81. For the place of *epistêmê*, *thea* and the Meadow of Truth (*leimôn. alêtheias pedion*) of Plato, *Phaedrus*, see Proclus, *Plat. Theol.*, 4 chs 6, 13–15.
82. 'Inflation' and 'bootstrapping' are some of the most recent cosmological theories regarding what led to the 'Big Bang'. See S. Hawking, A. Guth et al., who propose that before the Big Bang there was a period of ultra-rapid inflation brought about by a quantum bootstrapping out of virtual void. The 'hidden' form of existence in Proclus' terminology generally refers to 'unity' but also to the intelligible being; see *Plat. Theol.*, 3 ch. 24; 4.8; 4.11.
83. See, for example, *El. Th.*, props 188–9, 191. Life and motion: *Plat. Theol.*, 3.46.13–18; cf. Aristotle, *Phys.* 8: 250b. Celestial circulation and motion of the intelligible heaven: Proclus. *Plat. Theol.*, 4.20; cf. *In Crat.*, 59.10. Exegetical tradition goes back at least to Plotinus.
84. Plato passages: *Parm.* 142–5, *Phaedr.* 246–50, *Crat.* 396.
85. 'Intelligible and intellective', 'connecting': Proclus, *Plat. Theol.*, 4 chs 1–2, etc.
86. Intelligible vs sensible heaven: *Plat. Theol.*, 4.19–22; cf. *In Tim.*, 3.174–5.
87. *Schêma*: *Plat. Theol.*, 4.12; 4.40. 'Contact' (*haphê*): 4.40.
88. Proclus' treatise on Number occupies a significant part of *Plat. Theol.*, bk 4, especially pp. 29–30. Number is hypostasised here. For the 'Four Forms', see 4.88. Interestingly, Proclus considers this sublevel to be feminine in principle (*thêlyprepês*) because it is generative and multiplying.
89. Substance = the realness of being: E. Gilson, *Being and Some Philosophers* (Toronto, 1952), p. 26 (One and Being in Plotinus).
90. Proclus wrote several books on this theme: *On the Theology of Orpheus*, *On the Agreement between Orpheus, Pythagoras and Plato on the Chaldaean Oracles* (not extant); *On the Chaldaean Philosophy*,

On the Hieratic Art of the Hellenes (partly extant). For the Orphic and Chaldaean elements, see for example *Plat. Theol.*, 3.80, 3.73, 3.99; *In Tim.*, 1.311–15; *In Crat.*, 59.10.

91. Wholeness and Eternity: from Plato, *Parm.* 142 and *Tim.* 37–8; Proclus, *Plat. Theol.*, 3 chs 25, 16 and 18, respectively. For eternity hypostasised, Aeon, see also *El. Th.*, prop. 53.
92. Whole and total: cf. Plato, *Theaetetus* 203, *Laws* X 903–4; Aristotle, *Metaph.* 5: 1024a; 7: 1045a. See also Proclus, *Plat. Theol.*, 3 ch. 14.
93. On the Chaldean Aeon, adjusted by Proclus from the god of Time to that of Eternity, see Lewy, *Chaldaean Oracles and Theurgy*, pp. 99–105. Cf. *In Tim.*, 3.16.5–10.
94. The term 'first-born' (*prôtogenês*) is Orphic (cf. frg. 64); *Plat. Theol.*, 3.91.11. Proclus links it with Parmenides.
95. Totality (*to pan*): *Plat. Theol.*, 3 ch. 20, from Plato, *Sophist* 244; Plurality itself: *Plat. Theol.*, 3 ch. 26, from *Parm.* 129de. 132; Living-Being: *Plat. Theol.*, 3 chs 15 and 18, from *Tim.* 30–1, 37; Model: *Plat. Theol.*, 3 ch. 15; Form of Forms: 3 ch. 18, from Aristotle, *De Anima*, 432a2.
96. Tetrad of classes and Forms: *Plat. Theol.*, 3 ch. 19; cf. *In Tim.*, 3.108–12. Plato's 'four ideas' had been modelled on the four Empedoclean 'roots'. See also Proclus, *In Tim.*, 2.52.20–53.10, which has the same reference to the Pythagorean number-four symbolism as *Plat. Theol.*, 3.64.19.
97. Proclus, *El. Th.*, props 129, 117. Cf. Lloyd, 'Procession and division', pp. 34–8.
98. One-to-one unmediated relationship with being: see *El. Th.*, props 135–8; cf. 117. The divine *henads* are finite in number: prop. 149. On the Neo-Pythagorean origins of the many ones, Dodds, *Proclus Elements*, p. 271; Dillon, *Middle Platonists*, pp. 346–8, on Moderatus. For the authorship of the henads doctrine: Saffrey and Westerink, *Proclus. Théologie*. 3, pp. ix–xvii, li–lxxvii, keep it in Syrianus. Dillon in a series of articles, for example *Iamblichi Fragmenta Chalcidensis*, pp. 412–16, 'Iamblichus and the henads again', in *Divine Iamblichus*, ed. Blumenthal and Clark, concludes that Iamblichus had a theory of henads, but as intelligible objects (i.e. what the Athenian School would consider the 'one being' at the level of intelligible Being).
99. *El. Th.*, props 144, 140; cf. prop. 117; *In Tim.*, 1.209–10.
100. See Lloyd, *Anatomy of Neoplatonism*, p. 160 n. 17: *hyparxis* has nothing to do with Aristotelian inherence. Rist, 'Mysticism and transcendence in later Neoplatonism'. *Hermes* 92 (1964), 217–25, and P. Hadot, *Porphyre et Victorinus* 1, pp. 488–93, 213–23.
101. *Hyparxis* translated as 'subsistence': Dillon, *Proclus Parmenides*, pp. 419, 519.
102. *Hyparxis* translated as 'root-being': P. Hadot, *Porphyre et Victorinus* 1, p. 489, and on 'l'être et l'étant'.
103. Henads bonded as one: Proclus, *Plat. Theol.*, 3.10–12; *El. Th.*, prop. 118.
104. Identity and sameness translated as 'coincidence': Lloyd, *Anatomy of Neoplatonism*, pp. 166–7, with Saffrey and Westerink, *Proclus. Théologie*, 1.97.21, etc.
105. See also Lloyd, *Anatomy*, pp. 161–3.
106. Providence as foreknowledge: Proclus, *El. Th.*, prop. 120.
107. Proclus denies Forms to individuals: *In Parm.*, 824–5.
108. *In Tim.*, 1.135–42; *In Rep.*, 2.299. Everything is part of the appropriate divine series: see *El. Th.*, props 139–45; *In Tim.*, 1.210.17–25, 2.201.25–9; *In Rep.*, 2.296.5–13; *Hier. Art*, 151.14–23, 150.22–3.
109. *El. Th.*, props 162–5; cf. *Plat. Theol.*, 3.26–8. List compiled from *Plat. Theol.*, bks 3–6.
110. *Akrotês* is the highest in any particular grouping, and value, so the 'henad', the ultimate unity in every entity, is the highest property of all, counting from the lowest participant. It is in essence the *akrotês* of being: see for example *El. Th.*, prop. 146; *In Alc.*, 31.10. *Anthos* is another technical term and derives from the 'Chaldaean Oracles'. Two 'flower' examples: *In Tim.*, 3.118.26; *In Tim.*, 3.296.
111. 'Father', 'mother', etc., classes of gods: *El. Th.*, props 151–9. Some, such as the 'anagogic', also have theurgical functions: see Lewy, ibid., ch. 3.
112. Trouillard, *La Mystagogie de Proclos*, pp. 243–6.
113. On the problem, see *El. Th.*, prop. 159. Cf. Dodds, *Proclus Elements*, p. 281. One and the *henades*: *Plat. Theol.*, 3 chs 1–4, 7; *El. Th.*, props 6, 21 (Cor.). Limit–Unlimited and Being: *Plat. Theol.*, 3 chs 8, 9–11; *El. Th.*, props 89, 90–3. A. D. R. Sheppard, 'Monad and Dyad as cosmic principles in Syrianus', in *Soul and the Structure of Being*, ed. Blumenthal and Lloyd, goes no further than Methone and Dodds, but (pp. 11–12) points out that in *El. Th.* the discussion on the divine henads commences with prop. 113, after the discussion on the pair.

114. For the relation of the pair of principles to the One, see Lloyd, 'Procession and division', in *Soul and the Structure of Being*, especially pp. 19–21. On the 'manifesting' role of Limit and the Unlimited, see *Plat. Theol.*, 3.32; cf. *In Tim.*, 1.384, and A. J. Festugière, *Comm. sur le Timée* 2, p. 248 n. 2.
115. *El. Th.*, props 120–2, 134. Rosán, *Philosophy of Proclus*, p. 281.
116. 'Father' and 'mother' divinities relative to Limit and the Unlimited: see *Plat. Theol.*, 1 ch. 28; *In Tim.*, 1.130–2; 1.174. However, henads do not cease to be unical principles with respect to being: cf. C. D'Ancona, 'Proclus, henads and archai in the superintelligible world', *Rivista di Storia della Filosofia* 47.2 (1992), 265–94.
117. List from composite sources: Proclus, *In Parm.*, 1,119–23, and *Plat. Theol.*, 3.33–4. For form and matter as images of limit–unlimited: Proclus, *Plat. Theol.*, 3 ch. 10; *In Tim.*, 1.384–6.
118. On the Neo-Platonic view of God, see for example A. H. Armstrong, 'The apprehension of divinity in the self and cosmos of Plotinus', *The Significance of Neoplatonism* (1976), ed. R. B. Harris, pp. 187–90. The notion of the One as the God above any personification derives from Pythagoreanism and Neo-Pythagoreanism: see for example Dillon, *Middle Platonists*, pp. 126–8 on Eudorus, pp. 355–7 on Nicomachus.
119. For Plotinus' One, *Enn.* I.7; 5.4–5; 6.2 and 9. For the background to the Neoplatonic One, and the development of the hierarchical ordering, Dodds, 'The Parmenides of Plato and origin of the Neoplatonic One', *CQ* 22 (1928), 129–42; J. M. Rist, 'The Neoplatonic One and Plato's Parmenides', *Proceedings of the American Philological Society* 93 (1962), 389–401; Saffrey and Westerink, *Proclus Théologie*, 1, pp. lxv–lxxxix. For the 'Pythagorean' and Platonist antecedents to Plotinus, see Dillon, *Middle Platonists*, ch. 7. It should be remembered that later Neo-Platonists thought of Plato as a 'Pythagorean' Plato; see Syrianus, *In Metaph.*, 10, 80, 190; Proclus, *In Tim.*, 1.1. General study: D. J. O'Meara, *Pythagoras Revived.*
120. Speucippus on the One and Non-being: R. M. Dancy, *Two Studies in the Early Academy* (New York, 1991), pp. 77–111. But see Dillon, *Proclus' Parmenides*, pp. 485–6.
121. *El. Th.*, props 33, 146. The transcendent Final cause is identical with the transcendent Efficient cause: *El. Th.*, props 11, 12.
122. The One can be approached philosophically by 'negation' (*apophasis*), or by 'analogy' (*analogia*): see *Plat. Theol.*, 2 chs 5, 10–12 (negation), 7–9 (analogy).
123. The 'analogy' of solar light: in Plato, *Rep.* VI, especially 507. For Proclus, *Plat. Theol.*, 2 ch. 4.
124. Proclus, *In Parm.*, bk 7; *In Tim.*, 1.256.4; W. Beierwaltes, *Denken des Einen*, on the whole issue of the Absolute One and human approach to it. J. N. Deck, 'The One, or God, is not properly a Hypostasis', *The Structure of Being*, ed. R. B. Harris, pp. 34–9. On the apophatic terms, *El. Th.*, prop. 123, 162; *In Tim.*, 1.3.30; *In Alc.*, 181.18; *Plat. Theol.*, 2 ch. 6. See also Dodds, 'The unknown God in Neoplatonism', in *Proclus Elements*, pp. 310–13; Rist, 'Mysticism and transcendence in later Neoplatonism', pp. 213–25; cf. the 'Hymn to God', in *Philosophia Chaldaica*, ed. A. Jahn, pp. 62–77; L. G. Westerink, *Anonymous Prolegomena* (1962), p. xvi n. 46, notes that fragments of this Neo-Platonic hymn are quoted by Olympiodorus, *In Gorgiam* (ed. L. G. Westerink, 1970), 32.22–4; 243.21–3; and by Ammonius apud Asclepius, *In Metaph.*, ed. M. Hayduck, CAG 6.2, 20.27–8; 123.15. The Hymn to God was previously attributed to Gregory Nazianzus. That the author could be pseudo-Dionysius the Areopagite: 'Ein Neuplatonischer Hymnus unter den Gedichten Gregors von Nazianz', in *Gonimos: Neoplatonic and Byzantine Studies presented to L. G. Westerink*, ed. Duffy and Peradotto, pp. 61–83. Cf. *The Cloud of Unknowing*, ed. P. Hodgson (1958) (and Penguin Classics).
125. Criticism of problems and solutions to Neo-Platonic 'negation' encapsulated by S. Katz, 'Utterance and ineffability in Jewish Neoplatonism', in *Neoplatonism and Jewish Thought*, ed. Goodman, pp. 279–98.
126. Matter is an effect of the One alone: see Dillon, *Iamblichi Fragmenta*, pp. 236–7 with a useful diagram; Wallis, *Neoplatonism*, pp. 148–9, 66–7. Seeds of such a notion may be found earlier in the first-century AD Alexandrian Platonist Eudorus: Dillon, *Middle Platonists*, pp. 127–8. Proclus describes Matter as 'dissimilarly alike' (*anomoiôs hômoiômenê*) to the One, referring to Plato, *Parm.* 159e. This formula expression occurs also in Syrianus et al.: see Saffrey and Westerink, *Proclus. Théologie*, 1, pp. 144–5.
127. Lloyd, *Anatomy*, pp. 107–10.

128. Proclus links the darkness of matter to the 'Abyss', a Chaldaean term (see Lewy and des Places) for the unknowable First Principles and the One; see Thomas Taylor, *The Commentaries of Proclus on the Timaeus of Plato* (1820), 1, p. 324 note, and Festugière, *Comm. sur le Timée*, 2, pp. 247–9. This is in fact Proclus' solution of the problematic primordial disorderly motion in matter: such motion is not due to an evil world soul, but to higher causes above and prior to the Creator himself; cf. *In Parm.*, 842–5. For the doctrine of the evil world soul and disorderly motion of Plutarch and Atticus, see Dillon, *Middle Platonists*, pp. 202–6, 252–4. Matter to 'a degree good' is a snub to Plotinus' association of matter with evil; *Enn.* 1.8.4. For Proclus, the divine good reaches everywhere; privations of good cannot be causes of evil: see *Mal. Subs.*, sect. 38.
129. See R. W. Sharples, 'Responsibility and the possibility of more than one course of action: a note on Aristotle *De Caelo* II 12'. *Institute of Classical Studies Bulletin* 23 (1976), 69–72. I am grateful to him for bringing it to my notice. For a full exposition of the ancient debate, see Simplicius, *In Cael.*, 482–90.
130. That the simplicity of material objects makes it easier to contact divinity: Dodds, *Proclus Elements*, pp. 232–3; A. H. Armstrong, *An Introduction to Ancient Philosophy*, p. 202; Wallis, *Neoplatonism*, pp. 156–7, repeats the same, but admits that 'this does not, however, seem to be explicitly stated in any extant text'. Dodds, *The Greeks and the Irrational*, especially pp. 291–311, concentrates on the use of symbols but overlooks the primary aim of theurgy, viz. 'the Elevation (*anodos*) to the Intelligible Fire', a quote from Iamblichus' *Myst.* appearing at the beginning of the section. Dodds, *Proclus Elements*, p. 232, uses the terms 'maximal' and 'minimal' to distinguish the two senses of participation. Wallis, ibid., accepts that the emphasis is on the divine power. On theurgy and 'elevation', see Lewy, *Chaldaean Oracles and Theurgy*, ch. 3 and excurs. 8. From particulars to realities via Forms, not via negation of qualities: Proclus, *In Parm.*, 889.10–15.
131. The 'Tartarus of matter': Proclus, *In Rep.*, 2.183.17–21, describes Tartarus as the room (*chôros*) of all disorderly and obscure matter, as opposed to Olympus, which is all-shining and most lofty (cf. pseudo-Aristotle, *De Mundo*, 400a8).
132. *El. Th.*, prop. 110; from particulars to realities via Forms, not via negation of qualities: *In Parm.*, 889.10–15.
133. See for example *El. Th.*, props 73–4.
134. Comment made during a seminar on Neo-Platonism at the Institute of Classical Studies, London, in 1980, and subsequently confirmed.
135. For Proclus' metaphysical poetics, I am grateful to R. M. van den Berg, 'Proclus' Zonnehymne. Inleiding, Tekst, Commentaar, Interpretatie' (Doctoraalscriptie, Leiden University, 1994).
136. On the Neo-Platonic mystagogy, see *Plat. Theol.*, 1.25–6, 3.52.20–1; Trouillard, *La Mystagogie de Proclos*.
137. On the elevation and theurgy and the Chaldaean Oracles in general, see Lewy, *Chaldaean Oracles and Theurgy*. On the Hieratic teachings in the Neo-Platonic Schools, see S. L. Karren, 'Near Eastern Culture and Hellenic Paedia in Damascius' Life of Isidore', Ph.D. thesis, University of Wisconsin-Madison (1978), ch. 3 and Appendix. On theurgy in Proclus specifically, see A. D. R. Sheppard, 'Proclus' attitude to theurgy', *Classical Quarterly* 32.1 (1982), 212–24. On Iamblichean theurgy, see G. Shaw, for example in *The Divine Iamblichus*, ed. Blumenthal and Clark.

4

PHYSICS AND METAPHYSICS

To stop at metaphysics would present a distorted and very incomplete picture of Proclus and his Neo-Platonism. Proclus was not just a metaphysician, and Neo-Platonism was not concerned solely with intangibles. For the (late) Neo-Platonist, physics and astronomy were part of the overall account of things, and the training ground for the study of metaphysics. Examining physics and astronomy with metaphysics offers an invaluable insight into the depth and range of Neo-Platonic philosophy. Indeed, we owe many remarkable innovations in physical thought to the Neo-Platonists' application of their general metaphysics to the world of body and matter.

Natural, or physical, inquiry had always been part of Platonic philosophy. Likewise, for Proclus, physical theory is an integral part of his whole metaphysics and epistemology. He conceives the physical world as the 'visible and tangible' image of reality. The physical world is not disparate from the incorporeal but is modelled on and linked to it. The universe as a whole, both tangible and intangible, is governed by the same set of metaphysical and logical principles. Belief in the essential unity of the universe, far from being irrational,[1] is Proclus' very assertion of his confidence in its scientific intelligibility.

Nevertheless, Proclus does not assert that unity is by itself sufficient to explain everything. He knew that there had to be a place for plurality. This is why he insists on a hierarchical arrangement of the one and many. Without it, everything would collapse into a unified but chaotic heap. A system of explanation must encompass the diversity of entities and provide a reason for their differences.

(Neo-)Platonists were positive, as Plato himself was, that science leads to a comprehension of the eternal, transcendent reality. In the Iamblichean Neo-Platonic curriculum, physics is first taught from Aristotle, and mathematics from Ptolemy and others. At the highest cycle of the advanced level, mathematical physics is taught from Plato's *Timaeus*. In both cases, science is linked to metaphysics. At the first level, after (Aristotle's) physics, and mathematics, comes Aristotle's metaphysics. At the highest level, after Plato's *Timaeus* comes the *Parmenides*, the pinnacle of Neo-Platonic studies and the source for their theory of Forms and divinity. As Proclus explains near the beginning of his grand *Commentary on the Timaeus*, intimate knowledge of reality and God is not for the flaccid mind. It is for the well-trained thinker, who has been proven in the stadium of philosophical argument.

> For the whole of philosophy is divided into theory about the intelligibles and the worldly (*egkosmiôn*), and appropriately, because the cosmos, too, is twofold. The one is grasped by intellect (*noêtos*), the other by the senses (*aisthêtos*), as Plato will say (*Tim.* 30c). The *Parmenides* summarises the inquiry about the intelligibles, the *Timaeus* about the worldly things . . . but neither the one (the *Parm.*) omits altogether the theory of things in the physical universe, nor the other (the *Tim.*) that of the intelligibles, because the sensibles exist in the intelligibles as paradigms [*paradeigmatikôs*: an adverb], and the intelligibles exist in the sensibles as images (*eikonikôs*) . . . Therefore correctly did the divine Iamblichus say that the whole of Plato's theory is included in these two dialogues, the *Timaeus* and the *Parmenides*, for the inquiry of things in and above the world has its most excellent fulfilment in these two, and no order of beings is left unexplored. (Proclus, *In Tim.*, 1.13.1–14.1)

Proclus' physics of the Elements of the world contains many innovations. First, Proclus overthrows Aristotle's theory entirely. The Elements are four, not five. They are quanta, particles of quantity, not pure qualities. The four Elements are both in the heavens and on earth; heaven and earth are no different in substance but in mode. Secondly, he links mathematics with dynamics. The particles of the Elements are delineated geometrically, but they exhibit active powers. Thirdly, he acknowledges distinctly the existence of sub-atomic levels. The elementary particles are not irreducible 'atoms' but consolidated modes of reality, which may dissolve to other less solidly-defined modes leading to matter as pure power. Fourthly, he sees the Elements not as physical substances but as states with certain essential properties, which are modified relative to the grade of existence in which they are.

The rejection of Aristotle's theory of the Elements in Late Antiquity, the supremacy of the four Elements, and the mathematical conceptualisation of matter did not come about solely because of the rise of Neo-Platonism and the revival of Plato's doctrines. It was prepared also by other schools of thought that espoused the four-Element composition of the universe (Stoicism), or promulgated the mathematical view of the cosmos (Neo-Pythagoreanism). Moreover, some later followers of Aristotle, such as Xenarchus, had criticised Aristotle's doctrine of the fifth Element for the heavens. However, the history of the Elements of the world goes back a long way, to the search for the 'principles' of things: the beginning of philosophy.

1. WHAT ARE THE ELEMENTS?

The search for the fundamental principles of the world goes back to the very origins of Greek philosophy more than 1,000 years before Proclus. Many of these first philosophers Aristotle subsequently called 'physicists', natural philosophers, to distinguish them from later thinkers who concentrated on ethics and logic. In a sense, the problem of prime principles (*archai*) is comparable to that occupying modern cosmologists today: how can we explain economically the diversity of natural forces, particles, cosmic bodies and dimensions of space-time? Parsimony (sometimes known as 'Ockham's razor') is the methodological rule that the number of entities needed to explain something must be the minimum necessary. It encourages us to look for simplicity in scientific explanation. Noticing regular patterns in the diversity of events sustains our belief that the complex phenomena are regulated by simpler, natural 'laws'. Indeed, Nature herself seems to oblige. Modern theoretical models and empirical observations seem to point to a period in the life of the universe when its contents were less diverse. The entire universe may have come into being from an utmost unity: a singularity ('black/white hole').

Is this account felicitous? Yes, insofar as in science we try to substantiate explanations of regular patterns and general laws with observer-independent entities, such as particles, energy fields, etc. For example, that metals conduct heat rapidly, transmit electricity and affect magnetic materials, is a general pattern with substance. Metallic structure contains free particles (electrons) that cause the observed phenomena. However, the answer is no, insofar as we have made a logical leap. 'Prime principle' has (at least) two distinct senses. The one refers to origins or causes. When something derives from, or depends on, something else, that other is its 'principle'. The second sense refers to constituents in a compound. The constituents are 'principles' in the sense that their mixing brings about the (composite) substance. Conversely, a substance can be analysed into them. Strictly speaking, only origins and causes are primal. However, we may also think constituents as primal, if we presuppose that the constituents of something must have existed before the (composite) substance.

In Greek philosophy, Plato was the first to distinguish explicitly the prime principles (*archai*) from the constituents, the 'elements' (*stoicheia*) of things. Material bodies cannot be 'principles' because no individual body can be fundamental for the entire universe (*Tim.* 48b–d). So the prime principle is 'beyond substance' (*epekeina tês ousias, Rep.* 509b) and is found in the non-physical Forms.

Background

The Presocratic 'physicists' looked for simple substances from which the world of our sensory experience came to be. Mortal creatures and physical things 'come into being', last for a certain time (temporarily) and then 'pass away into non-being'. Only the prime principles remain imperishable. Soon, however, it became apparent that such prime principles cannot be part of the changeable, physical domain of our immediate experience. They have to reside in a domain more suited to their stable existence. Even for the followers of Democritus, the elementary bodies, the indestructible, indivisible 'atoms', cannot be grasped with our ordinary, sensory perception. They are too small to be seen. The primitive atoms have solely mechanical properties (size, movement). Sensory qualities (colour, taste, heat) are reducible to them. What we conceive through sensory evidence is 'bastard' knowledge (fr. 11, Galen). Bodies as we experience them are no more than temporary compounds of the atomic particles, and all forms of sensation and quality result from their shapes, sizes and movement. For example, the sensation of heat is due to the sharpness of the corpuscles of fire. 'Legitimate' knowledge, i.e. that of the atoms themselves, is beyond sensory justification. The Atomist theory was not limited to physics but extended to psychology and religion: there was an atom for the soul, too. However, the Atomists thought that there are countless kinds of atoms.

Empedocles (fifth century BC) asserted that there are only four fundamental substances. He chose four out of the many competing 'principles' of that time. He called them the 'roots': Fire, Air, Water and Earth. They became the standard for most of Greek physics for the whole of antiquity and extended well into European and Islamic science. The 'roots' combine and dissociate in various ways, forming in the process the transient objects of our perceptible world. The forces which initiate these compositions and decompositions are love and strife, which construct by uniting, destroy by separating and reconstruct again, perpetually. Empedocles' physical theory seems to have been linked to his religion, for there is evidence that he believed in the transmigration of souls: birth, death and rebirth. In the Greece of that time, this was the doctrine of the Pythagoreans.

For the Pythagoreans, numbers, as opposed to physical substances, are the permanent, prime principles of the world. Numbers alone have unity and give rise to multiplicity in an orderly, knowable fashion. Physical things are transient, indefinable and impossible to know in essence. Numbers are the elements of everything, even of divinity. So they embrace all reality. Their configurations reveal the structure of the universe. Number four is one of those special configurations, for if one adds its constituent numbers, one plus two plus three plus four, they come to ten, the total range of single numbers. Four, or 'the tetraktys' as the Pythagoreans called it, represents the total universe.

Out of these sorts of reasoning emerged the subsequent distinctions: reality and phenomenon, intelligible and sensible, form and matter; and the argument between mathematics and physics, which lasts to the present.

Plato's mathematical physics

For Plato, the geometrical shape of bodies determines qualities as we sense them (for Plato's corpuscles, *Tim.* 53c–57d). Different sizes of the same bodily shape present variants (isotopes, as it were) of the same kind (*Tim.* 58d–60b). Size and shape affect also the body's movement and stability. For example, small ones can move rapidly through others, and break them up. Geometrical properties can thus account for a wide variety of qualities and changes.

Plato retained Empedocles' parsimony, and adopted the four 'roots': Fire, Air, Water and Earth. Let us say that they correspond to the four states of matter: radiation, gas, fluid, solid. He integrated them in his theory of Forms by calling them the four 'kinds' (*genê*). In his theory of knowledge (*Theaetetus* 201e–5, etc.), he talked about the 'elements' (*stoicheia*). In Greek vernacular, 'elements' refers to the letters of the alphabet. So the 'elements' are the ABC of the universe. Just as the letters of the alphabet combine to form words, which we use to describe our world, so the elements combine to produce the entities of our world.[2] But if we liken language to the orderly cosmos, we do not pass straight from letters to language. The simplest constituents that convey meaning are vocabulary words. Further, we do not form words from letters but from syllables. So, for Plato the four 'roots' are not truly 'letter-elements', nor even 'syllables' (*Tim.* 48c). They are the simplest bodies – the vocabulary words. The basic constituents of a three-dimensional, corporeal world must also be three-dimensional, corporeal. What are the 'syllables'? They are the surfaces that delineate the three-dimensional bodies. What are the 'letter-elements'? They are the basic types of face-boundary of the basic bodies.

Plato identified the four 'simple bodies' (*hapla sômata*) with four of the five perfect solids. In geometry, these are the only possible regular convex solids that can be inscribed in a sphere. In honour to his discovery, we call them the Platonic solids. By the way, in modern cosmology the possible number of perfect solids indicates the number of spatial dimensions, which determine the physics of fundamental forces and particle states. In three dimensions there are only five polygons; in four there are six. Fundamental field-forces spread according to the inverse-square law, precisely because their energy diffuses in the space of three dimensions. In Presocratic philosophy, both the concept of the mathematical description of matter, and the total number of simple bodies of the universe, four, had strong links with the doctrines of Pythagoras. Plato assigned the 'root' Fire to the tetrahedron, the regular solid with four faces; Air to the octahedron, with eight faces; Water to the icosahedron, with twenty faces; Earth to the cube, with six faces. Plato did not assign his fifth perfect solid, the dodecahedron, with twelve faces, to any particular simple body. As he said in the *Timaeus* (55c), the Creator used it up (*katechrêsato*) for the universe as a whole. This opened the way to speculations which led to a fifth simple body, or state, for the heavens (e.g. Aristotle).

The Platonic primary bodies are like the Atomist in that they are minuscule, invisible bodies: corpuscles. Like the Atomist, the Platonic solids embody the primary properties of things, and their combinations yield the qualities of our ordinary, sensory experience. Both the Atomists and the Platonists were Corpuscularists. Indeed, Aristotle targeted his criticism of mathematical physics against the Platonists and Atomists in common, and when Proclus defends Plato against Aristotle, he employs some typically Atomist arguments. Where Plato parted from the Atomists was on their notion that the fundamental corpuscles move in a random, indeterminate way; in his emphasis on the shape of the primary bodies; and in that his primary bodies are not totally indivisible but can change into each other.

Looked at in a little more detail, the Platonic solids are bound and determined by plane surfaces, the faces of the solids. According to Plato, triangular constituents, triangles, form these faces. Plato had discovered that only two types of triangle are sufficient to build up the faces of the four different solids: the rectangular scalene and the rectangular isosceles. These two shapes were the true Platonic irreducible 'elements'.[3] On Plato's account, the faces of the particles of Fire, Air and Water are all composed of exactly the same atomic triangle (the rectangular scalene). Earth, alone, is composed of the other triangle (the rectangular isosceles).

The explanatory power of this theory of fundamental corpuscles was enormous. First, unlike Democritus, Plato was able to account with a single integrated theory for the common nature of the simple bodies, for their differences, and for their (chemical) inter-transformation. This he achieved with the fundamental triangles. For example, during boiling, Water becomes mainly Air (vapour). With the action of Fire, Water dissolves into its elementary triangles, which then reconstitute as Air. Since Fire, Air and Water are composed of the same elementary triangle, they can readily transmute into each other. Their irreducible letter-constituent bears no inherent brand that is exclusively fiery, airy or watery. Qualities are based solely on complete corpuscles, the polyhedral solids. In fact, it has been shown that if one calculates the number of fundamental triangles before and after a process of transformation, their number is equal – that is, the first chemical equation.[4] Pure Earth cannot, however, participate in this cycle, because its basic component is incompatible with that of the other three. Plato astutely allowed Earth to exist, in most cases, in a state of fusion with the other three, usually with Water, so that only 'earthy' substances like ashes were irreducible to anything else.[5]

Secondly, the geometry of the solids defines the mechanical properties of the basic corpuscles. For example, Fire's supreme capacity to penetrate through things, to fire and dissolve them, is due to the angle that the tetrahedron presents to the outside. Fire's particle alone presents an acute, cutting, angle. All the others present a blunt angle. Actually, Plato's description of this polyhedral angle is not entirely clear. He seems to refer to the angle formed at the tips, the vertex, of the polyhedron by all the surrounding faces. However, it makes sense only if we see it as the angle formed by two adjacent faces, the dihedral angle, which can be acute, obtuse or right-angled.[6]

Another way of producing sensible qualities from geometrical properties is by the size of the particle. For the regular solids, the larger the solid the greater number of faces. So Water with its twenty faces is the largest of all, whereas Fire with its four faces is the smallest. This size-factor affects the relative mobility, penetrability and weight of the corpuscle.

Yet another way is by the overall shape of the faces of the corpuscles. For example, Earth's inertness and preponderance to remain stable can be attributed to the all-sided stability of the cube and its component equal-sided triangle. The other polygons have less secure bases.[7] Earth is the hardest to unbalance, move or displace from its state of equilibrium, because of its overall shape (compare also the notions of centre of gravity and the position of the earth as a cosmic body at rest at the centre of the universe). By contrast, Fire's readiness for rapid, ceaseless movement derives from the instability of the scalene, unequal-sided, triangle and the triangular faces.

Thirdly, the Element-solids could account easily for the immense diversity of Fire, Air, Water and Earth: for example, dense and light waters, thick and rarefied air, burning and purely illuminating fire. The differences are due to the different sizes of the same-shaped basic corpuscle. Bigger faces bound bigger solids. There can be small and big particles of Fire, Air, Water and Earth, each maintaining its own characteristic shape but changing in size in steps. Tenuous Air consists of small particles, but misty, heavy Air of bigger particles. So each type of particle preserves its identity without compromising its diversity. Such theory can explain a great deal of physical variety without resort to extraneous qualities. As we shall see, Proclus fits this aspect of Platonic physics into his general metaphysics of grades and levels of existence. This, in brief, was the physical theory of the Platonic school.

Aristotle's qualitative physics

For his account of the 'sublunary' world, that is, the earth and atmosphere, Aristotle maintained the four 'simple bodies', Fire, Water, Air, Earth, but followed an altogether different analysis from Plato (see Aristotle, *On Generation and Corruption* 2.1–8, *On the Heavens* 3.3–6; 4.4–5). Bodies, as we normally experience them, are compounds of simple ones. Compounds can be agglomerations (*syntheseis*) of different parts (*anomoiomerê*), or they can be combinations (*mixeis*, *kraseis*) of same parts (*homoiomerê*). Qualities are the contents of experience. So we 'seek to find the principles of perceptible body in sensible qualities' (*GC* 329b7), and 'the principles of sensible things are sensible' (*Cael.* 306a9–10). The four simple bodies consist of 'elements', which are qualities.

Although Aristotle had the same kind of simple bodies as Plato, he analysed them into elementary *qualities.* To account for changes, Aristotle arranged the elementary qualities into two pairs of contraries (hot–cold, dry–wet). Fire's elements are dry and hot, Air's are hot and wet, Water's are wet and cold, Earth's are cold and dry. For Aristotle, the elementary qualities have a prime matter as their substrate in which they change. For Plato, however, there is a universal 'receptacle' (*Tim.* 50a–51b), which provides the 'room' for the transformations of the corpuscles and the volume for their three-dimensional extension.

This does not mean that Aristotle was against pure mathematics. The mathematician studies the same things as the physicist without being slave to anecdotal evidence and error (Aristotle, *Phys.* 2.1–2; compare *De Anima* 3.4–7). Geometrical objects have their own matter, which is 'intelligible' (*Metaph.* 1036a2–12, 1037a5), that is, an extension in thought. Only the study of pure being is higher, for it examines things abstracted even from mathematical shape (*Metaph.* bk 7). The mathematician and the physicist study the same objects, but differently. Mathematicians concentrate on the shape, but the physicist looks at the shape lodged in a physical substance. Do scissors cut because of the *sharpness* of the cutting edge (mathematics) or because they are sharp *scissors* (physics)?

2. PROCLUS AGAINST ARISTOTLE

Aristotle's criticism of Plato's physical theory in *On the Heavens* book 3 (306a1–307b18) was the last part of a radical and comprehensive rejection of all previous theories on the analysis of the sublunary world, including that of Thales, Anaxagoras and the Pythagoreans, but principally of the Atomists and the Platonists. The questions were: what is an 'element' (*stoicheion*)? Are 'simple' (*hapla*) bodies, in their capacity as non-composite, truly 'origin-principles' (*archai*)? Or can they be analysed further? The debate raged over at least three linked but distinct concepts – element, simple body, origin-principle – of which the key one, 'element', was ambiguous, sometimes referring to the simple body and at other times to the origin-principle. I shall try to distinguish *E*lement the simple body from *e*lement in substantive and attributive form for the ultimate in analysis.

Aristotle rejected the Democritean Atomists mainly for two reasons. Atomists saw the number of irreducible 'indivisibles' (*atoma*) as infinite (which contradicts the demonstration of an actually finite universe). They denied real generation and process (in a domain characterised by generation and process).

Aristotle rejected the Platonists (*Cael.* 3:306a1–307b18) for their corpuscular view and the geometrical construction of physical particles, especially their analysis into atomic plane triangles. Remember that 'atomic' and 'corpuscular' are distinct. Something indivisible is not necessarily a body, and a body (however little) is not necessarily indivisible. But insofar as the Democritean atoms were corpuscles, and conversely the Platonic corpuscular solids were composed of indivisibles (the basic triangles), both Atomists and Platonists got the blame.

Proclus, and the later Neo-Platonists, following Iamblichus' programme of the mathematisation of all fields of knowledge, fully subscribed to the mathematical view of matter. However, they had also inherited Aristotle's penetrating criticisms. So the Neo-Platonists' ideas are to be found mainly in their Commentaries on Plato or Aristotle. These are invaluable because they afford us glimpses into how Plato might have replied to the criticisms by his famous pupil, Aristotle, how much Platonists stayed close to Plato, and, most of all, what they thought as philosophers in their own right.

Proclus' counter-criticism of Aristotle was titled *Investigation of the Objections by Aristotle to Plato's Timaeus* (*episkepsis tôn pros ton Platônos Timaion hypo Aristotelous anteirêmenôn*).[8] It survives in fragments in important texts of the Greek Commentators on Aristotle: mainly in Simplicius' Commentaries *On the Heavens* and on *Physics*, and in John Philoponus' own thesis *Against Proclus on the Eternity of the World.* Proclus' treatise seems to have been an introduction to his massive *Commentary on Plato's Timaeus*, and together these form a unique record of a Platonic riposte, and of Neo-Platonism.

Proclus' specific counter-arguments against Aristotle are in Simplicius' *Commentary on Aristotle on the Heavens*, 640–71.[9] Fortunately, they appear to be quotations. Simplicius adds his own commentary at the end of Proclus, so in a few places the boundary is vague. According to Simplicius, Aristotle's disagreement with Plato is not real (*pragmatikê*) but rests on Aristotle's superficial reading of the *Timaeus.*[10] Simplicius then proceeds to state the final theory of Greek physics, after 1,100 years of debate.

> Plato seeks to derive the origin of the four bodies, Fire, Air, Water and Earth, from principles more fundamental than the ones based on the qualities of heat, cold, dryness and moisture: namely, from the differences in quantity (*en toî posôi diaphorôn*), since quantity is more akin to body (*suggenesterôn ousôn pros ta sômata*). This is evident from the fact that he accounts for the differences of those qualities by the differences in shape (*schêmatôn diaphoras*). (Simplicius, *In Cael.*, 641.1–5)

Aristotle's objections (Simplicius calls them *enstaseis*, compared with Proclus' own book-title *antirrêseis* or *anteirêmena*) are divided into fifteen Arguments (*epicheirêmata*).[11] Commentary tradition is probably responsible for this imparting of exact form on the fluid text of Aristotle's *On the Heavens.* To prise open Proclus' method and contents I shall examine them not necessarily in the order in which they occur in Aristotle and in Simplicius, but in four topics:

1. Arguments on the exemption of the Earth from inter-transfor-

mation (Objections 1 and 2).
2. Arguments on the void gaps between the polygonal solids (Objections 6 and 8).
3. Arguments on the derivation of qualities from geometrical properties (Objections 9–15).
4. General problems about the shape of solids (Objections 5 and 7), and the Platonic triangles (Objections 3 and 4).

The Earth Element

As we have already seen, one of the consequences of the triangular structure of the particles in Platonic theory is that Earth does not share the same elementary triangles with the other Elements. Therefore, it cannot participate in the cycle of change from one Element to another. Aristotle's objections to this were twofold. First, Earth's exemption is consistent neither with logic nor with natural phenomena as we perceive them. This is because the same rule, the capacity to change, does not apply to all parts of the theory (Objection 1). Further, according to the theory, Earth is an Element that cannot change (Objection 2).

In his reply, Proclus goes directly to the question of physical evidence for Earth's mutability. He sidesteps the issue of consistency by drawing attention to the core of any physical theory, evidence from Nature herself. He then points out that there is in fact no discernible evidence in support of the claim that Earth ought to transform to something else. The earthy substances that appear to change do so because they are made not of pure Earth but of a mixture with other Elements, Air or Water (*gêina . . . aeros ê hudatos anapeplêstai*). Burning and metalworking demonstrate admirably that pure Earth remains impassive (*menei apathê*) in the form of ashes, whereas the Water admixed with it dissipates in Fire. To clinch the counter-argument, earth as a cosmic body is also impassive.[12]

However, Proclus emphasises that although Earth is unchangeable (*ou metablêtê*), it is divisible (*diairêtê*). Since the other three Elements are 'established in Earth's bosom', Earth suffers (*paschei*) the division initiated by the other three (which, incidentally, he names Water, Air and *sublunary* Fire; more on this later). His choice of terms shows that Earth is a kind of substrate for the other Elements. So his conclusion is that Aristotle has not understood Earth's properties. Earth does not change into other Elements but suffers their dividing action.[13] Simplicius comments that the Earth is capable of transformation to other Elements indirectly, through the (Aristotelian) 'common matter' (*koinên hylên*). The further argument by Alexander of Aphrodisias that the Earth's dissolution would result in a void, because Earth cannot be transformed directly into other Elements, is refuted. As Simplicius observes, it links to Objection 4 and the physical nature of the triangles.

Void gaps

Aristotle's objection was that the four polyhedral particles do not fit precisely next to each other. Only the tetrahedra of Fire and the cubes of Earth can fill by themselves the whole room around a point. Objection 6 stated this mathematical fact exactly, whereas Objection 8 elaborated the criticism by introducing the further problem that it would be impossible to generate continuous bodies, such as flesh and bone, by ill-fitting particles (or elementary triangles). Aristotle seems to focus on flesh and bone because in Plato's *Timaeus* they are said to be composed of all the four Elements, not just Fire or Earth, which would have avoided the problem of continuity.[14]

First, Proclus reiterates the position in the *Timaeus* 58a.[15] The sublunary world is bounded by the heavens: this limits the movement of the elementary particles. Secondly, he uses the standard argument of all the Atomists, that is, that the small corpuscles manage to squeeze into the interstices among the large ones, thus leaving no void. Thirdly, in the case of composite bodies, such as human bones and flesh, he points out that the larger constituents are naturally more inert to motion (*stasimôterôn*) and so keep the body stable.

Again, Proclus concentrates mainly on the physical reasons why Aristotle's objections are false. He does not appear to be concerned with the *a priori* part of the objection that derived from the mathematics of contiguity. Although Simplicius gives us a full exposition of the geometry supporting this objection, his recounting of Proclus' reply includes no reference to it. This is strange, because Proclus had himself written on it in his famous mathematical *Commentary on Euclid's Book A*.[16] As we shall see, there are many good reasons why he seems to disdain the problem of interstitial void. Suffice it to say, first, that for a Platonist there is no pure void anyway anywhere. The whole world resides in the infinitely continuous Receptacle. Moreover, for Proclus the whole universe is filled with universal space, an impassive, luminous body. Besides, for Greek physics interstitial void was not an insurmountable problem. As long as no void is permanent, there is no real problem. The existence of such temporary voids, far from disturbing the integrity of physical bodies, could account conveniently for their changes in volume as they expand and contract.

Physical qualities and geometrical properties

The main battleground between Aristotelian and Platonic (with Pythagorean) theories of the Elements was that diverse and opposite qualities can flower from figures and numbers. The very number of these objections – seven – demonstrates Aristotle's impatience with Plato's polyhedral particles. However, the philosophical merit and seriousness of Aristotle's objections are not, or were not meant to be, equally distributed to all. Simplicius, who is more sympathetic to Aristotle's physics than Proclus, states bluntly that two of them are nothing more than 'jokes' and 'mocking jests' (*kômôdia*, *skôptikon*). The main focus was the derivation of the qualities of hot and cold.

Proclus' replies are highly systematic. He employs one basic counter-argument to refute in a uniform and coherent manner Aristotle's different kinds of criticism. One of these core counter-arguments is that the sensible qualities arise from a combination of many geometrical properties, not just from one or two, as Aristotle tried to argue. In this he shows perspicuity of mind, for he sees through Aristotle's cunning.

For example, in reply to Objection 10, that all Elements should burn with a degree depending on the angle of their polyhedra, if angle is what makes Fire burn, he recalls that Fire combines not only a sharp angle (*oxytês gônias*) but also thin sides (*pleuras leptotês*) and a fast speed (*tachos kinêseôs*). The difference between burning (*kaion*) and purely illuminating (*phôtizon*) depends on the size of Fire's particle.[17] Again, in reply to Objection 15, which queried how cold can be attributed to the large size of the particles of Water and Air when there can also be large particles of Fire, he reaffirms that the properties of the Elements depend on many variables, including size. Therefore a corpuscle of Fire, be it large or small, is still fiery and hot, never cold.[18]

This sort of counter-argument is at work also in the demolition of the 'mocking' Objection 11, that the mathematical bodies should also burn with their sharp angles. Although Proclus simply points out in the passage that the mathematical solids cannot burn, precisely because they are mathematical and not physical, Simplicius adds that the mathematicals are neither in matter nor in motion, and that they do not possess physical sides with which to cut and burn.[19] However, this does not answer *what* are solids and planes. This is the topic of Objections 3 and 4.

We can discern the same line of argument also in Proclus' reply to the criticism (Objection 14) that, if shape accounts for the quality of cold, where is the 'opposite shape' to account for heat? Proclus exposes the superficiality of the Objection by observing that heat, or cold, are not themselves shape, but the quality and faculty *of* a certain shape (*oude schêma . . . alla dynamis tinos schêmatos*). So *different* geometry can yield *opposite* qualities.[20]

Another core counter-argument is that essential elemental properties must be distinguished from accidental. Some properties are innate and characteristic while others are not. Proclus uses this distinction to answer, for example, the other joke objection (12), where Aristotle argued that if substances become Fire when burned, it is equivalent to saying that paper or cloth become knives when cut. Proclus applies it also to the more empirical Objection 13, where Aristotle pointed out that Fire coagulates bodies and also divides them. Proclus answers by drawing attention to the question of which properties are essential and which are not. Cutting and dividing (*diakrinei*) are indeed essential (*kat' ousian*) properties of Fire particles. However, cutting is only an accidental property of the metal edge of a knife (Objection 12). Again, any coagulation due to Fire is accidental; it requires the whole process of metalworking first. In support of his argument, Proclus cites many empirical examples from metallurgy and drug-making – the manufacture of drugs for the 'fiery', sanguine, ailments.[21]

In his Objection 9, Aristotle focused on the relation of shape to movement. If the cube (the polyhedron of Earth) embodies stability and the property to remain in one's proper place, all the Elements should also become cube-shaped when they are in their own places.

All Proclus has to do here is to repeat the definition of motion of the *Timaeus*, which is different from Aristotle's. Sublunary elemental movement is mainly due to dissimilarity (*anomoiotês*). Earth remains stable in its place because, apart from being at the cosmic centre, the shape of its particles is the same in all six directions: up, down, right, left, forwards, backwards. The other three Elements can maintain themselves in their proper places, their spheres, only by moving around each other so that they imitate the celestial circulation. They do not have Earth's stability.[22]

Particles and sub-particles

The most common misunderstanding of the Platonic theory of the Elements has always been the assumption that the polyhedral solids are the ultimate atoms. In fact the only indivisible elements are the two basic triangles. Aristotle's arguments against the properties of shape rest entirely on *his* supposition that the 'simple bodies', the particles of the four Elements, are indivisible, invariant bodies. He bases his objections, therefore, on a misunderstanding of the fundamentals of Plato's theory.

This is demonstrated well by Objection 5, which presented as a difficulty the geometrical fact that slices of such polyhedra do not yield figures similar to the original. Proclus scolds (*memphetai*) this misreading of the Platonic doctrine and reminds us quite simply that the tetrahedron, for example, is the seed-element of Fire, not Fire itself (*pyramida sperma pyros . . . All' ouchi pyr*).

However, Proclus goes further and declares that, since the original theory allowed for the drift of debris plane triangles until they reconstitute into new polyhedral particles, the existence of irregular forms of the Elements does not affect the theory itself. This is because such temporary sub-particles, which are contrary to nature (*para physin*), will eventually become regular particles.[23] (It could be claimed that modern quantum-based physics asserts much the same with the theory of virtual particles.) Irregular states are not alien among the irregularities of the sublunary realm. They are eventually put into proper place by their surrounding polyhedra.

Objection 7 took the reverse position. The expected shape of the polyhedra, which should not (for Aristotle) change, must alter when substances are put into containers. That is, liquids change when poured into vessels. Proclus' counter-argument uses, again, one of the well-established, standard Atomist replies. The characteristic polyhedral shapes apply only to the minuscule particles, not to the Elements as a whole. So, many small and individually invisible corpuscles can pack together to generate any kind of large-scale shape. In addition, since the containers are themselves composed of elementary bodies, there is no mismatch between the container and the contained.

What about the circular heavens? Proclus' solution to the problematic mismatch between the absolutely spherical shape of the heavens and the rectilinear shape of the sublunary elements takes a different path. He says that, as the tetrahedral pyramids of sublunary Fire approach the heavens, their faces become convex by the celestial binding (*kyrtoutai sphiggomena*). In this manner, they are made to fit into the curvature of the celestial orbits.

The 'binding' of the heavens links to the filling of interstitial void (see Objection 6). However, the 'bending' of the tetrahedra presents metaphysical difficulties. Simplicius' appendix to Proclus' statement[24] concludes that such bending would constitute a forced action, even if it is supposed to be natural (: '*hypo technês ê physeôs biasthenta sphairika gegonen*').

Proclus, earlier in his reply,[25] had linked the curving of the tetrahedral faces to the sphericity of the natural places of the Elements as wholes. He had said that this sphericity is by imitation to the heavens due to 'something better' (*ti kreisson*) in the nature of the Elements than their sublunary properties. This better nature has been imparted by 'more divine' causes. It is also supposed to explain why bodies that come close to the heavens (*ta tôi ouranôi plêsiazonta*) move in a circular fashion. The curving of the Fire tetrahedra is facilitated by their natural 'plasticity' (*euplaston*) – perhaps a reference to the 'moulding' by the Creator (cf. Plato, *Rep.* IX 588). This implies that all the Elements are liable to curving in the celestial mode.

This short passage is saturated with Proclus' Neo-Platonism. The reference to the 'wholes' is part of his ontological concepts which link the scheme of participation to universals and particulars.[26] The 'better' quality is due to 'more divine' causes. So, by taking into account his metaphysics, his line of explanation I suggest is as follows. The wholes of the Elements are spherical because they are the images of, and seek to imitate, the 'better' perfect, spherical figure of the 'self-substantiated' and 'self-sufficient' entities *in* the sensible world, namely the celestial objects. The particles of the wholes of the Elements that come closest, in terms of both place and value, to the heavens seek to curve in a convex manner in order to fit and 'unite' with the heavens. This is not a forced bending but a manifestation of their own predisposition to become perfect, like their models. This is, therefore, a source for Simplicius' and Philoponus' theory of the Elements, according to which they move in a circle neither naturally nor by counternatural causes but by a 'supranatural' (*hyperphysin*), 'helpful force' (*bia epôphelês*).[27]

Nevertheless, it is interesting that Proclus does not pay equal attention to other more physical lines of explanation. His earlier argument on the container and the contained may also apply to the celestial and sublunary domains. After all, he conceives the heavens to be composed of all the Elements. It would have had the added bonus of accounting for Aristotle's zone of combustible material at the upper regions of the atmosphere (see later) by the friction of adjacent celestial and sublunary rectilinear polyhedra. Alternatively, he could have made more of Plato, *Phaedo* 110b6, that the spherical shape (of the earth) is like that of an inflated, elastic, twelve-piece leather ball. The most probable reason behind the explanation which we have from him is that it integrates better with his basic philosophy. Perhaps, if he had introduced rectilinear bodies in the heavens too, he would have encountered the almost insurmountable problems of continuity, and discontinuity, both in substance and motion. However, this is one of few forays into more metaphysical answers. By contrast, Proclus' approach to the problem of the fundamental triangles and the sub-particles is distinctly and almost unconventionally physical.

The plane triangles were both the ultimate components in Platonic theory and its most problematic entities. If they were supposed to be plane – that is, two-dimensional – how could they generate three-dimensional particle bodies (Objection 4)? Secondly, how could they exist free in suspension (*paraiôrêsis*) during the mutual transmutation of the Elements (Objection 3)? As Simplicius observes, the core of the problem was whether the plane surfaces (*epipeda*) of the polyhedral particles are purely mathematical (*mathêmatika*), or physical and enmattered (*enyla*, *physika*). As mathematical entities, the planes would only have length and breadth, but as physical entities they could also have depth.[28]

Proclus clearly chooses to regard the ultimate components and their combinations as physical, three-dimensional bodies. His answer to Objection 4 reveals that he thinks of them with some kind of depth. Physical planes, and the basic physical triangles, can thus produce three-dimensional bodies.

> And the physical planes are not without depth (*ouk estin abathê*); for if body extends (*diistêsi*) the whiteness[29] which falls upon it, it will all the more separate the planes which encompass it (*ta periechonta*). But if the plane has depth (*bathos*), the generation of body will no longer be from an incorporeal (*ex' asômatou*), but it will be the generation of a more composite (*synthetôteron*) from a more simple body. (Simplicius, *In Cael.*, 648.19–23)

Proclus goes further. He recognises that there can exist unformed and half-formed particles (*amorphota*, *merê êmigenê*), states of matter in the process of becoming fully formed particles of the Elements.[30] Together with the triangles, they constitute a whole class of physical bodies that are not proper particles but sub-particles. Such a concept of elementary bodies and atoms strikes at the very depth of mass-matter. The familiar properties of physical existence arise from the structure of microscopic particles. They, in turn, are formed from even more elementary quanta which do not manifest any perceptible quality of their own and exist at the interface of real and virtual. They can combine indeterminately to form many half-real particles which may only exist for a short while, so that they do not disturb the continuum of time and space. They are but the first seeds of physical reality as it takes form in the completely indefinable sea of pure power that is matter.

3. PROCLUS' ELEMENTS AND THEIR QUALITIES

Before we go on further, let us review the properties of Proclus' Elements as we learn them from the fragments of his defence against Aristotle's fifteen Objections.

First, they are broadly like the Platonic: they consist of minuscule particles in the shape of the four regular polyhedra. The geometrical structure of these particles defines their associated perceptible qualities, such as sharpness or bluntness of angle, size, etc. Particles are made up of more basic constituents, the plane triangles.

Secondly, these plane figures possess depth and are physical entities. In this Proclus probably differs from Plato, who seems to have regarded them as mathematical representations. However, the physical interpretation links with Proclus' general ontological principle that things exist in a mode appropriate to their level of existence. There may be mathematical solids and plane figures, but at the level of physical existence we must take the simple bodies and the elementary triangles as material bodies extended in three dimensions. Thirdly, the polygonal shape of the simple bodies remains the same, unless there are ontological reasons – that is, when they approximate the spherical heavens.

What does not feature in his counter-criticism of Aristotle, but does in his *Commentary on Plato's Timaeus*, is the concept of power (*dynamis*) (see Chapter 2, section 8, Power). In theories about the physical world, it came to denote faculty, quality (*poiotês*, introduced by Plato, means literally 'such-and-such-ness'), the power to interact, and (with Aristotle) the potentiality to be something. In theories about motion, *dynamis* referred to processes that are proper and natural for a thing to do, or to movements that a thing can perform inherently (e.g. the movements of living beings). By contrast, *bia*, meaning violence, was used for forced movements which are somehow extraneous or unnatural for things to do. In mathematics, *dynamis* stood for square numbers or square roots.

The trouble is that, in Platonism, mathematics explains and makes the physical possible, so it is often hard to tell whether *dynamis* refers to something mathematical or non-mathematical.[31] In the *Timaeus* (53b4–7), Plato admitted that the sensory qualities (*dynameis*) pre-existed in the 'receptacle' until they were 'put into shape by means of forms and numbers (*eidesi kai arithmois*)', and God constructed them to be as fair and good *as possible*. In other words, the qualities (*poiotêtes*) – hot, cold, the means by which things interact – became subjected to, and were delineated by, the geometry of the polyhedra.

In medical theory, powers and qualities were the dominant form of description of what keeps an organism alive and healthy and what makes it ill. Together with the concepts of the 'physicists' on the properties of things, powers and qualities were part of the vocabulary of many thinkers. During the intervening eight centuries between Plato's *Timaeus* and Proclus' Commentary on it, there were many developments which increased the importance of power and of qualities.

The one major development directly related to the Elements was, of course, Aristotle's qualitative theory. It also influenced the systematisation of Hippocrates' theory of humours largely because the concept of powers was already dominant in medicine. There are four physiological humours: blood (Fire), black bile (Earth), yellow bile (Air) and phlegm (Water). Correspondingly, one can diagnose four types of people: the sanguine (predominance of blood), the melancholic (black bile), the choleric and the phlegmatic. Medical concern over the transmission of affliction and disease reinforced the concept of 'sympathy'. Further, in Late Antiquity, 'power' came to include metaphysical entities, and in Neo-Platonism it was firmly placed at the heart of metaphysics.

Bodies and powers

For Proclus, 'power' is both what typifies a thing and its means of interacting with the rest of the universe as a whole. We could say it is a field of force around a body.[32] Thus he identifies power unambiguously as one of the three fundamental aspects of physical bodies and particles. They are: the enmattered form defining the essence of the physical thing; the extension-volume of its body; the physical powers, the qualities dependent on the enmattered form.[33] 'Every physical body needs to have a physical power with which it is capable of acting according to its nature (*kata physin*)' (Proclus, *In Tim.*, 2.65.6–8). Proclus recognises, much like Newton twelve centuries later, that physical forces in action can be described mathematically. The explicit linking of physical and mathematical accounts, and the elevation of power to the core of ontology, are some contributions that are uniquely Neo-Platonic. No other school of philosophy had identified and expressed them in such a systematic manner before, not even in Plato's time.

The general idea that properties can have both a mathematical and a physical aspect stems from the fusion of Neo-Pythagoreanism and Stoicism in Neo-Platonism. Iamblichus, rather than Plotinus, was the one who established firmly the 'Pythagorean' interpretation characteristic of (late) Neo-Platonism. The Athenian School followed it, and so revitalised the intimate bond of these two philosophies which can be found in the later Plato and the early Academy. This is substantially the background behind Syrianus' statement:

> The five figures which are discussed in the *Timaeus* and which are employed in the formation of the cosmic Elements are, on the one hand, interpreted in mathematical terms (*mathematikois onomasin*), but, on the other, hint (*ainittetai*) at active and creative powers of nature. (Syrianus, *In Metaph.*, 85.38–86.2)

However, Proclus' solution is much more thorough and radical. Aristotle's theory of the Elements is finished. Both his qualitative analysis and his proposal of two primary properties for each simple body are redundant, if not inconsistent with the basics of physical existence. Proclus seems to build on a Middle Platonic solution that the Elements have *three* primary powers each.[34] His reasons for it are twofold, mathematical and physical.[35] We have already examined why he thinks that the Elements are in particles. Let us therefore concentrate on the theory of three powers for each.

Proclus' mathematical reason for having three powers is inspired from Platonic-Pythagorean mathematics. In the *Timaeus*, Plato links the three geometrical sides of a solid to the three numerical factors involved in cubic numbers. Thus it was found that between two cubic numbers, for example, $3^3 = 3 \times 3 \times 3 = 27$, and $2^3 = 2 \times 2 \times 2 = 8$, there would always be two cubic numbers which are made up from factors of the two previous, viz. the intermediaries: $2 \times 2 \times 3 = 18$, and $2 \times 2 \times 3 = 18$. This results in a continuous chain of proportion: 27:18 equals 18:12 which equals 12:8.[36]

What is important here is the argument that mathematical physics gives a coherent and complete account. By this line of argument, the intrinsic *three*-dimensional structure of the physical world yields *four* different types of elementary solids. In other words, the mathematics of the three-dimensional, physical world shows why there are exactly four simple bodies. If the solid of Fire is like a three-factored number a^3 and Earth's is like b^3, then Air's is like $(a^2) \times b$ and Water's is like $a \times (b^2)$. Hence he can deduce mathematically that there are only four simple bodies, their relationship, and the number of their fundamental properties (three).

His physical reason is based on the Platonic metaphysics of continuous existence. To have a universal continuum, things have to be similar to each other. The Elements must have properties that make them coordinate and relatable. Otherwise it would be impossible to have a knowable, coherent universe, and indeed to have a universe at all.

With this basic argument, he examines the physical theories of past philosophers and rejects them one by one. Those who assigned one primary power to each Element, such as heat to Fire, cold to Air, moisture to Water and dryness to Earth, fail totally to meet the criterion of cosmic continuity. First, as pairs they are composed of contrary properties. Secondly, the two pairs of contraries have nothing in common with one another: hot and cold are entirely unrelated to dry and moist.

He also rejects those who assigned two powers to each Element. He credits Ocellus, the second-century BC Neo-Pythagorean, with it, though this theory was that of Aristotle.[37] That is, hot and dry to Fire, hot and moist to Air, moist and cold to Water and cold and dry to Earth. Proclus points out that adjacent Elements 'are both hostile and harmonious to each other in *equal measure* (*isôi metrôi*) and so will in equal manner (*ison tropon*) both dissolve and reconstitute the universal bond . . . which will no more *be* than *not be* (*ouden mallon estai ê oukestai*)' (Proclus, *In Tim.*, 2.38.11–16). For example, Fire and Air have one quality in common, hot, but they differ also in one quality: dry vs moist. Further, two patently opposite Elements, Fire and Earth, are made adjacent, sharing the dry quality.

The theory of three primary powers for each Element is intended to meet both the physical and the cosmological criteria. First, Fire and Earth differ in all three factors and are therefore opposite. Secondly, each Element has *three* powers, but adjacent Elements differ only by *one* at a time: this leaves two the same. Adjacent Elements have two powers in common and one different and contrary. Consequently, 'to be' triumphs over 'not to be' by 2:1, with 'to be' as remainder. So the universe exists in safety.[38] With this ingenious analysis, Proclus aims to show that similarity as a basic principle applies both to intelligible entities and physical quantities.

Proclus assigns the following threefold powers to the Elements:

> To Fire, tenuity/smallness of particle (*leptomereia*), sharpness/acuteness of angle (*oxytês*), mobility/ease in motion (*eukinêsia*);
>
> to Air, tenuity/smallness of particle, bluntness/obtuseness of angle (*amblytês*), mobility/ease in motion;
>
> to Water, grossness/largeness of particle (*pachymereia*), bluntness/obtuseness of angle, mobility/ease in motion;
>
> to Earth, grossness/largeness of particles, bluntness/obtuseness of angle, immobility (*akinêsia*), or difficulty in motion (*dyskinêsia*). (Proclus, *In Tim.*, 2.39.21–5)

These primary powers are mainly the geometrical properties of the polyhedral particles put in a formula.[39] Particles can be small or big, and their cutting edge can be either sharp or blunt. However, as we shall see shortly, the power of mobility and immobility derives partly from the geometry and partly from more incorporeal causes. Nevertheless, the combined effects of these primary powers are intended to yield all the secondary, empirical qualities and sensations, such as hot and cold.

Proclus chose these primary powers with great care, for the rule of similarity gives him more alternatives than he needs. I refer in particular to the 'intermediaries', Air and Water. Each simple body has three powers, since it is a physical entity existing in a three-dimensional space-continuum. The three dimensions, or 'sides', have both a spatial and a qualitative aspect. These twofold 'physical sides' manifest corporeal extension and embody the capacity for interaction.

> Therefore, because Fire has three physical sides (*pleuras physikas*), viz. the triple powers, tenuity, sharpness and mobility, we can make Air, which has two sides of Fire and one of Earth, or rather two powers (*dynameis*) of Fire and one of Earth, by subtracting the power in the middle, viz. sharpness, and by inserting in its place (*anteisagagontes*) bluntness. So it is exactly fitting that the Element which is next to Fire should have more in common (*koinônein*) with it than with the Element which is third distant from it (i.e. Earth). Again, because Earth has three physical sides which are contrary (*enantias*) to the powers of Fire, viz, grossness, bluntness and difficulty in motion, we can make Water, which has two sides, or powers, in common with Earth but receives one from Fire, by taking away the power difficulty-in-motion and by inserting the power ease-in-motion. (Proclus, *In Tim.*, 2.40.23–41.2)

Observe, however, that according to the rule of similarity alone it would be quite sufficient to have Air = ⅔ Fire + ⅓ Earth, and Water = ⅓ Fire + ⅔ Earth, regardless of the nature of the power. By choosing, for example, to replace Fire's sharpness-of-angle with bluntness to make Air, one imposes a physical constraint governed by the geometry of the polyhedra of Fire and Air. This excludes the other logically possible types of Air, viz. the one with tenuity, sharpness and difficulty-of-motion, or the one with grossness, sharpness and ease-of-motion, both of which would still be ⅔ Fire + ⅓ Earth. The geometry of the icosahedron and tetrahedron precludes such alternative kinds of Air solids.[40] And the same applies to Water.

This problem could not have arisen in the Aristotelian scheme, because there each Element has only one pair of qualities assigned to it. So, if we compare the number of all possible combinations of the elementary qualities in the two schemes, we will find that in the Aristotelian scheme the total number is four pairs, the same number as the corners of a square (a figure in two dimensions). This is of course most convenient for a *four*-Element theory. But in the Platonic scheme the total number is eight triads – one for Fire, one for Earth, but three for Air and three for Water. It is the same total number as the corners of a cube (a figure in three dimensions). This is the cost rising to the third dimension.

The above underlines that Proclus' elementary powers are subordinate to the geometrical properties of the four kinds of particles. The primary powers are not pure qualities and cannot be combined indiscriminately. They are mainly the geometrical properties of the polyhedral particles put in a formula.

Perceptible qualities and primary properties

Promising an economical account for the many, transient qualities which we experience is a fine intention. How does Proclus manage to match perceptible and qualitative properties with the primary powers? To judge it in the context of his philosophy, we can look at his many citations of secondary qualities.

Some of them are easy to derive from the triple powers. For example, Fire's cutting (*tmêtikon*) and penetrating (*diadynon*) qualities are directly due to the shape of the tetrahedron, and its impulsive (*itêtikon*) quality may be attributed to the mobility of Fire's particles. The separating (*diakritikon*) property refers in a physical context to Fire's capacity to divide (*diairein*). Similarly, Air's tenuity is a direct reference to the smallness of Air's particles. Again, Earth's stability (*hedraiotês*), steadfastness (*monimon*) and solidity or firmness (*stereotês*) refer to Earth's immobility, or difficulty in moving.[41]

Other qualities do not show a direct dependence on the triple powers. These include efficacious or active (*drastêrion*) and illuminating (*phôtizon*) for Fire, connective (*synektikon*) and transparent (*diaphanes*) for Air and Water, and tangible (*hapton*) for Earth.[42] Qualities such as efficacious for Fire, scattered and weak (*diaskorpizomenon, asthenein*) for Air, and impassive or difficult to affect (*dyspathesteron*) for Water[43] may be due to the relative state of mobility, and the type of angle. In that case, 'efficacious' stems from Fire's sharpness and mobility. 'Scattered' and 'impassive', which are different degrees of resistance to an action, may depend on the size of the particle. We can extend the same line of argument to Earth, especially its tangibility, which Proclus sees as a kind of resistance.

> For that which is solid is tangible (*hapton gar esti to stereon*) and able to offer resistance to the touch (*antereidên . . . pro tên haphên*); for that which is easily dispersed (*euthrypton*) and cannot endure under the touch is in no way tangible. On this account Pythagoras calls the Earth 'enduring' (*tlêmona*), since it is solid and resists being touched (*antibainousan*), and since it is moved with difficulty and participates in permanent power. (Proclus, *In Tim.*, 2.12.21–5)

Yet, this account leaves Fire functioning as an agent, and the rest as patients, of which Earth offers the greatest degree of resistance. The bias prevails even in powers which Fire shares with the other Elements. For example, although 'easy to move' encapsulates the self-moving power of Fire particles,[44] for the other Elements it seems to convey the meaning of passive movement, to be readily displaced. As mentioned earlier, Fire's sharpness of angle is not adequate to account for all Fire's dynamic properties. Fire's unique power comes from an incorporeal source.

> Among the Elements in the domain of generation, Fire has the relation of form to the other Elements (*eidous epechei logon to pyr*). (Proclus, *In Tim.*, 3.113.25–6)

> For to what can we attribute visibility except to that which generates light? And what can this be except Fire? For Earth is the efficient cause (*poiêtikê*) of everything contrary to light; for Earth is the cause of darkness . . . whereas Air and Water are transparent (*diaphanê*) and are not visible by themselves; hence each is an intermediary between Fire and Earth, that is, between the one that is primarily visible and the one that intercepts vision . . . It therefore remains that Fire alone, when present in the other Elements, illuminates and makes them visible. (Proclus, *In Tim.*, 2.9.18–26)

Greek ideas on perception usually involved a touch, a contact between the subject and the object. In addition to Plato's division into an illuminating Fire and a tangible Earth, Aristotle explicitly made 'perceptible' and 'tangible' synonymous (*GC* 2.2:329b7). Thus Fire is the opposite of Earth (from Plato, *Timaeus* 31b f.), as light is to something opaque, as action is to resistance.

Proclus' theory of physical perception in relation to the Elements is this. To 'touch' something with our senses, it must offer resistance. Even vision requires both an active and a resistive component. We see things because there is a source of light *and* because there is something to intercept light. For example, we can see a ray of light only when there are specks of dust or vapour in the air. Imagine standing before a pond on a dark night. Switch on a torch and point it up to the sky. There is little light to see, for there is little to intercept it. Point it down towards the middle of the pond: first the water produces a pool of quivering light, and then the underwater soil and growth give out a brilliant spectrum of colours, shades and movements. Fire is *par excellence* active, and the 'tangible' Earth is *par excellence* resistive. The first without the second would be imperceptible, and the second without the first would be obscure. This is how we can see not only the sublunary but *also the celestial bodies* (the celestial bodies contain Earth, in direct contradiction to Aristotle).

> Therefore, the earthy Element is also there as a certain solid substance and tangible bulk (*sterea tis ousia kai haptos ogkos*) on account of which it resists our sight, whereas the fiery Element is that which illuminates and creates the form of the volume and spatial extension (*hôs phôtistikon kai eidopoion tou ogkou kai tês diastaseôs*). And their intermediaries, Air and Water, are also there, so that they connect and unify (*synektika*, *henopoia*) the Elements at the extremes. (Proclus, *In Tim.*, 3.113.29–32)

The problem is, however, that illumination and visibility do not depend on the three powers of Fire, as outlined earlier: rather, the other way around. The geometrical, mechanical properties of the Fire polygon do not generate light. Fire illuminates from its essence. Therefore the whole class of properties that rely on light as a species of Fire relate to the essence (*ousia*) itself rather than to the exteriorised power. This seems to be a case of 'internal power'.

In the polarity of Fire and Earth, the two other simple bodies, Air and Water, are 'intermediaries'. Proclus says that they 'bind' the two extremes, and are 'connecting', 'unifying' and 'transparent'. But this polarity conflicts with the polarity between Fire and Water, as it is found in Aristotle's scheme (which has two powers for each simple body). Proclus observes that this applies only to simple bodies that are subject to mutual transmutation, viz. Fire, Air and Water. This excludes Earth, which according to Platonic chemistry cannot change to anything else. 'We should no longer say that the opposites are Fire and Earth, but, instead, Fire and Water. For Water can above all extinguish Fire' (Proclus, *In Tim.*, 2.6.11–14). Water does not only extinguish Fire. Proclus says that it glues the pieces which Fire has separated. Consider the difference between dry and moist sand, or dry and wet clay, or dry and wet cement. The more bonded is the one with water. For Proclus, the power that enables it to do so is the largeness of its particles, which is also one of Earth's properties. The rationale appears in the *Timaeus* itself. The fusible kind (*chyton*) of Water, to which the metals are classed, is said to be composed of large and even corpuscles, which renders it, like Earth, more stable. This is why Proclus mentions evenness and smoothness as two of Water's qualities.[45]

Proclus makes Fire and Water the two complementary opposites at work in the construction of things. For this ontological process, he employs the language of metalworking. We have met it already in his levels of being, particularly that of Nature. There, the maker of Body is Hephaestus, the divine blacksmith. Proclus' metallurgical analogies extend to the description of all composite things. Does this mean that Proclus was a follower of alchemy? Elsewhere, Proclus dismisses gold-makers as charlatans.[46] Nevertheless, the Platonic, Stoic and Aristotelian ingredients (which concur in Neo-Platonism) supplied the fertile ground for the growth of a more metaphysical alchemy. The 'melting' of Fire and the 'gluing' of Water would be the source for the famous alchemical formula *solve et coagula*, dissolve and solidify. It was one of the most influential concepts in medieval and Renaissance physics, medicine and philosophy, which found ultimate expression in the Protestant revolutionary politics of the seventeenth century.[47]

> For melting and welding are necessary for the production of things whose parts are like each other (*homoimerôn*) [see on Aristotle' qualitative physics, above], the latter being provided by moisture and the former by heat; for everything (*to pan*) is melted down (*têketai*) by Fire and is glued together (*kollatai*) by Water. (Proclus, *In Tim.*, 3.321.22–5)

4. MODALITIES OF THE FOUR ELEMENTS

How can the same Elements have so many different typical qualities? Why should there not be more Elements to account for the differences? We may formulate economical, all-encompassing theories about reality, but how can some few truths encompass the vast diversity of events?

To Proclus, this challenge of reality came from several fronts. Greek philosophers discriminated between the 'sublunary' and the celestial domains. In our experience, on earth, we see bodies falling, such as stones, or rising, such as smoke. The same things change and feel differently. Ashes are hot and later cold, and so on with an inordinate number of qualities and changes. To account for them all, Proclus offers his theory of the four simple bodies with their mechanical structure and primary powers. However, once we look at the heavens, things are visibly different. The immense celestial dome is transparent. The stars and planets are visible, but sometimes one eclipses another. In the heavens, bodies do not fall down or rise up, they move circularly in regular periods, and endure, so far we can tell, for ever – unlike bodies on earth. Surely Aristotle was correct to draw attention to these obvious differences, when he postulated a celestial Element distinct from the four Elements. How could Plato have said that the four Elements pervade to the heavens? He could not have been paying close attention to the manifest differences between heaven and earth.

The problem of diversity of the Elements did not stop at the firmament. In Plato's *Timaeus*, the four corpuscular types embody Forms assimilated in the Creator's intellect. The Elements are not just physical bodies but principles of organisation and reason: four 'Kinds'. At the other end, the classic qualities of the four Elements pre-existed as pure powers, unformed and unintelligible. Creation put them in a coherent, intelligible shape, that is, the four simple bodies.

For Proclus, this bewildering variety of definitions of the Elements presents the problem of unity–diversity in another guise. How can we talk of the same Elements when we refer to things transient and enduring, sensible and intelligible, corporeal and incorporeal? He grounds his solution in the general metaphysics. The same four Elements are defined in different ways, each of which is true relative to the level of existence to which it pertains. The same Elements are in all levels but 'appropriately' in each. Such a comprehensive array of the Elements may not be found explicitly earlier than Proclus, though it derives from Plato, *Phaedo* 109–114c (and other kindred passages), where Socrates described his vision of the levels of the world just before he died.

In the hierarchy of reality, the four Elements make their first appearance at the level of pure Being. More specifically, they appear in the activity of Being. Proclus places here the Model, the *Paradigm*, of the universe by which the Demiurge, the activity of Intellect, creates the world. Here is the single 'all-perfect tetrad', which constitutes the quaternity of the Kinds of beings (*genê tôn ontôn*).[48] In Neo-Platonic jargon, they 'pre-exist' (*prohyparchein*) in a 'causal' mode, as principles, before they proceed towards their physical mode. The tetrad comprehends a monad and a triad (developed from Plato, *Tim.* 39e–40a). The monad corresponds to the Idea of the celestial beings, which are fiery. The triad consists of the Ideas of airy, watery and earthy beings. By this subdivision, Proclus intends to link physics with metaphysics. He plants the seed of difference between celestial and sublunary entities as 'high', that is as essentially, as the intelligibles. He also confirms Fire's unique status among the Elements. This explains the statement made elsewhere that the relation of Fire to the other Elements is as that of form to substrate.[49] However, because the intelligibles of pure Being are the first to participate in the Unity, the Elements are not yet distinct. Their tetrad is said to be in a 'hidden' mode (*kryphiôs*).[50]

The next level is that of the intelligibles and intellectuals of Life. Here, the Elements still exist as causal principles but no longer hidden. This is the place proper to pure Number.[51]

At the level of Intellect, the four Elements begin to exist as 'distinct Ideas' (*diôrismenai ideai*) but still are 'formal aggregates' (*eidêtikai periochai*). That is, they are not separated out completely.[52] At this level, they are the intellective (*noêra*) and demiurgic, efficient, Elements.[53] According to Proclus' metaphysics of participation, they exist in two modes. They are imparticipable (*amethekta*) in the Creator himself. They become participable (*methekta*) in the series that proceed from him. In other words, they exist as formal principles or ideas.

Next, at the level of Soul, the Elements are said to become self-moved (*autokinêta*).[54] Soul is the Platonic principle of self-generated motion. This is where the Elements acquire their own capacity for movement prior to Nature.

After Soul comes the level of Body. It is here that we encounter the 'encosmic' and corporeal mode of existence. This is where the Elements acquire volume and spatial dimension. That is, here are the four 'simple bodies' of physics. Proclus, in direct contradiction to Aristotle, finds all the four simple bodies *both* in the heavens and on earth. In the heavens, all the four Elements are in a celestial mode (*ouraniôs*): Proclus' pioneering conception of the 'summits of the Elements' (more on this in Chapter 5). In the sublunary domain, the traditional place of the four Elements, he distinguishes them into two levels: those in an orderly and knowable state, and those in a totally mutable and unknowable one.

What he means, probably, is this. The Elements as we experience them are subject to change (*metablêta*) and transform into each other, but their movements and changes happen in a relatively orderly manner (*tetagmenôs*). These are the Elements delineated by geometry, which renders them accessible to science. However, if we regard them as inchoate potencies, of the sort described in Plato's *Timaeus* 52–3, the mode of being proper to them is the 'unformed' (*amorphotos*). In this 'subterranean' realm (*hypogên*), the Elements have reached the 'last-ultimate' (*eschata*) level. Here they exist as 'sediments' (*hypostathmai*). Now, although 'sediments' and 'last-ultimate' come from Plato's *Phaedo* 109ff., Proclus would have known that 'last-ultimate' was Aristotle's definition of the most primitive subject, that is, individuals (*Metaph.*

9.7). So we may be looking at a bit of Neo-Platonic harmonising, where the 'sediments' of material foundation are the pure individuals, those 'allotted the final differentiation', which are 'unformed' and 'unstable' because they lack general, intelligible attributes.

> Their first mixing makes the heavens, which have everything in a fiery mode (*pyriôs*) and where the summits of all the Elements exist. From their second mixing they make the sublunary realm, where everything exists in a median mode (*mesôs*). From their last-ultimate mixing (*eschatês*) the subterranean entities are made, where the sediments of all (*hypostathmai pantôn*) exist; as the Orphic tradition says, here are the four subterranean rivers, *Pyriphlegethon* (i.e. Fire), *Acheron* (Air), *Ocean* (Water) and *Cocytus* (Earth). (Proclus, *In Tim.*, 2.49.14–18)

> By descending from that which is immaterial and unchangeable, you will produce the Elements that are subject-to-change and enmattered; and in this mode they will be inferior to the previous, but they will be similar (*hômoiôtai*) to them through the order and symmetry of their movements and the unchangeability of their changes. But if you descend even from this order and survey the much discordant (*plêmmeles*) and unstable (*astaton*) mode of the Elements, you will see the Elements that have become the last-ultimate (*eschata*) of all and are allotted the final separation and differentiation (*teleutaian lachonta diakrisin*)... being the sediments of all the ones prior to them. (Proclus, *In Tim.*, 2.46.19–27)

The modal four Elements are another example of how Proclus seeks to apply his hierarchical method of explanation to physics. The general metaphysics (see Chapters 2 and 3) is meant to apply to the entire universe both invisible and visible, and treat it as one intelligible whole. The four Elements, Matter, and intrinsic motion are treated as multi-modal. They have different properties which are typical of the different modes of existence. His metaphysics enables him to rethink much of the traditional Greek physics, and leads him to some remarkable conclusions, whose parallel we encounter in the latest modern science.

Matter, motion and substance

The four Elements have different modalities in their constitution, in their materiality and in their type of motion. Proclus employs the modalities to distinguish, for example, the sublunary Elements from the celestial, and to dispense with the need for a fifth Element (Aristotle's solution for the different heavens).

For Proclus' 'aether' and 'aethereal' tend to refer to the tenuous (*leptotês*) nature of semi-material things, such as the 'vehicle' of the soul,[55] and the medium in which incorporeal entities are said to manifest.[56] Such 'aether' is drawn from non-Aristotelian sources, such as the Orphic, Pythagorean, Platonic (cf. the *Epinomis*) and 'Chaldaean' writings. For example, he speaks of the Orphic Aether and the Meadow of the Platonic Myth.[57] For Proclus, aether is but the highest section of the subcelestial realm, lying closest to the fiery heavens.

> For the Fire in the domain of generation is a certain effluence (*aporrhoia*) of the celestial Fire and exists in the interstices (*koilômasi*) of the other Elements, for a sphere of Fire *per se* does not exist, but the upper extremities (*akra*) of Air are like the purity of upper Fire . . . This Aristotle [pseudo-Aristotle, *de Mundo* 2.392a5] seems to have had in mind when he thought fit thus to call the Fire that is down-here, as opposed to the one lying directly under the heavens carried around with the celestial circulation, which he says is 'fiery-like' (*pyroeides*) . . . Therefore, the really existent Fire (*ontôs pyr*) is in the heavens, but the purest of the sublunary Fire exists mixed with Air and lies next to heaven, and is, as Plato calls it [*Tim.* 58d1], aether. (Proclus, *In Tim.*, 3.111.22–112.1; 112.13–16)

Such a view of aether is practically identical to Aristotle's 'combustible material' (*hypekkauma*).[58] The 'combustible material' was thought to surround the atmosphere and be in contact with the celestial Aether. It periodically ignites through friction with the celestial Aether and creates a variety of spectacles: the Milky Way, comets and shooting stars.

What is the substance of the Elements? Can it change? If so, how can it retain its identity, its nature? Proclus applies the fundamental metaphysical rule that 'everything exists everywhere in the manner appropriate to each'. Each level of being has its own characteristic set of conditions which are natural to it. For example, being unmoved is the state natural to the intelligibles but not to soul. Likewise, all the four Elements, Fire, Air, Water and Earth, exist at all levels of being, but the consistency differs, 'in a manner appropriate to each'. As he repeats, 'the Creator made everything to exist in each other (*panta en allêlois*) together with the conservation of their distinct identity (*diasôzein tên diakrisin*)' (Proclus, *In Tim.*, 2.51.29–30).

Proclus' approach to the changing nature of the modal Elements is the same as his metaphysical construction of the levels of being. They constitute a mixture which changes. We have already met this concept in the 'mixture' of Limit and Unlimited. In his theory of the Elements, he applies more forcefully the concept of 'predominance' (*epikrateia*), probably because he has to deal with four constituents as opposed to two. Each mixing has one ingredient predominating over the others.[59] The celestial bodies have Fire predominating, while the terrestrial have Earth. 'Mixture' refers to the first part, 'everything is in everything' and 'predominance' to the second, 'appropriately to each':

> The four Elements and each of them are called 'elements', namely pure constituents, for both heaven and generation are made of them. (Proclus, *In Tim.*, 2.49.23–5)
>
> Likewise the really existent Fire is over-there in the highest place, and on this account the stars are fiery (*ta astra einai pyria*), since they are allotted the place of Fire, and the summit (*akrotaton*) of Earth is also there. Inversely, the whole Earth (*holê gê*) is down-here, participating as much as is possible to it in the last-ultimate mode of Fire (*pyros eschatos*) which is most earthy and gross (*gêïnôtatou kai pachytatou*), and accordingly the Fire that is over-there has the summit of Earth (*akrotêta tês gês*). (Proclus, *In Tim.*, 3.114.24–9)
>
> For as the Earth embraces everything in a terrestrial fashion, thus the heavens embrace everything in a fiery fashion; so that one Element is the predominant (*to epikratoun*) and the others are included (*perieilêptai*) in it in a causal mode (*kat' aitian*). (Proclus, *In Tim.*, 2.43.26–8)

The sublunary Elements exemplify the state of mixture. As Plato pointed out in the *Timaeus* (49–50), we cannot even refer to them as 'this', but as 'suchlike'. So, according to Proclus, few sublunary Elements exhibit the powers assigned to them in perfect condition.[60]

> If you want to examine each Element, you will see much mixing in them; thus Air is not simply small in its particles, for it has also something gross, moist-like and watery; nor is Water simply easy-to-move, for the last-ultimate form of it is earthy and difficult-to-move; and the mixed part of Fire resembles the obtuseness of Air, and this is so by necessity; for the summits of the second join with the sediments of the first. (Proclus, *In Tim.*, 2.51.20–7)

Proclus describes the celestial bodies as 'immaterial by comparison to the changeable matter' (*hôs pros tên metablêtên hylên*), whereas the sublunary are truly 'enmattered' (*enyla*).[61] This does not mean that he took away matter as the substrate power of the universe. Such 'immateriality' refers to the gross matter, the bulk (*ogkos*). Further, since both the celestial ('immaterial') and terrestrial ('material') are moving *bodies*, the differences of the Elements are partly due to the 'simple bodies'. They differ principally because they are in different modes of being.[62]

> For we would place in heaven all the Elements, but in an immaterial mode insofar as that is possible in the material realm (*all' aylôs hôs en hylaiois*), and then only according to their summits (*akrotêtas*); for if the Form of Fire, Air, Water and Earth exists even in the intelligibles, it is necessary that the heavens participate first in this tetrad. But the proceeding creation substantiates even the last-ultimate nature of the Elements, which is truly material (*ontôs hylaian*). (Proclus, *In Tim.*, 3.113.16–22)

> The enmattered Fire is different from the immaterial Fire, which is immaterial with respect to the matter of the sublunaries (*hôs pros tên hylên tôn hypo selênên*), as something corruptible is different from something incorruptible. (Proclus, *In Tim.*, 2.9.11–14)

> Pure Fire (*eilikrines pyr*) is in the heavens, and the whole Fire (*holon pyr*) is there, and Earth is also there but in a causal mode (*kat' aitian*), and that is a different species of Earth and is fittingly coexistent (*symphyesthai*) with divine Fire, for it possesses only the characteristic property of being solid (*stereon*). As the Fire that is over-there is illuminating only (*phôteinon*) and not burning (*ou kaustikon*), so the Earth over-there is not gross (*oude pachy*) either. (Proclus, *In Tim.*, 2.44.1–4)

For Proclus, heat and upward motion are not essentially characteristic of Fire, for such properties are not evident in the heavenly domain, which is pre-eminently in a fiery mode. They are characteristic of Fire only in its sublunary mode, where things have gross matter and move in rectilinear fashion.[63] Similarly, weight and downward movement are not essentially characteristic of Earth. They are typical of the sublunary mode.

> And it must be said that Plato does not characterise Fire with heat, nor with upward movement – for these are the characteristic properties (*idia*) of the Fire that is down-here and not in its own proper place – but by visibility; for this property embraces all Fire (*pan pyr*), both the divine and the mortal, the burning and the vital. (Proclus, *In Tim.*, 2.10.11–16)

> The nature of Earth is not the same everywhere and in all parts of the universe; but in some places it is more pure, immaterial and without weight (*katharôtera, aylotera kai abarês*) – for weight (*baros*) is not the characteristic property (*idion*) of Earth, but tangibility (*to hapton*) – and in other places it is more enmattered, heavy and moved with difficulty (*enylotera, bareia, dyskinêtos*). And in some places it exhibits only its solidity, but elsewhere it receives in addition other powers that are incidental to the process of generation (*genesiourgous*) and enmattered, just as in the case of Fire. (Proclus, *In Tim.*, 2.11.18–24)

To show that all the Elements, including Earth, are present at all levels of being, Proclus does not flinch from bringing as evidence Porphyry's report of incubi appearing to the lustful Etruscans of Italy. These are spirits who have sexual intercourse with women (males receive dreamy pleasures by the succubi). He submits that even such entities prove that they have something of Earth in them, because they are said to leave deposits of semen and remains of ashes.[64]

However, treating matter in this way creates a problem. To say that sublunary things are 'enmattered', and celestial things are 'immaterial', makes it difficult to distinguish gross matter from the state of being earthbound. How does this conception of materiality differ from terrestriality? Is the former identical and reducible to the latter?

Looking at Proclus' descriptions more closely, neither the bulky sizes of the Earth's particles nor any of its other powers account what it is to be earthbound. Disorder, confusion, irregularity, etc., do not relate to the powers of the Earth as a simple body. The answer must be that Proclus' conception of sublunary materiality depends on two different factors at once. First, it depends on the Earth's triple powers of the particles. Secondly, it depends on having earth as a metaphysical level in the hierarchy of being. The first accounts for the grossness of sublunary matter, and the second for the disorderly and chaotic sort of existence down-here. In other words, the first is what makes sublunary matter a mass, and the second is what makes it lacking form and determinate definition, that is, 'weak'.

> The discordant and disorderly (*ataktos*) flux and motion of bodies [*rhoê tôn sômatôn*; cf. Plato *Theaetetus* 152e][65] is produced sometimes (*pote*) by the lack of power (*adynamian*) of the creative and defining principles (*logôn*) and at other times by the excess (*pleonexian*) of matter. (Proclus, *In Tim.*, 1.39.1–3)

Movement is, likewise, relative to the level of being. Apart from the dynamics of procession and reversion, movement is a measure of the degree and mode of change of each grade of being. The further from the One and pure Being, the less integral and permanent an entity is, and the more spatial its separation and temporal its duration becomes. The further from the One and Being, the less 'regular' and the more 'irregular' movement is. The intelligibles are 'unmoved', soul is 'self-moved' (*autokinêtos*), while bodies are 'moved-by-another' (*heterokinêtos*). Each mode of motion is *natural* insofar as it is appropriate to its level of being. This is why Proclus calls the Elements 'unmoved' in their intelligible mode, 'self-moved' in their median (soul), and by less flattering terms in their encosmic modes.

Movement in the encosmic modes has at least three degrees of freedom and order. The celestial bodies move in an orderly, periodic and highly predictable, knowable fashion. The sublunary ones move in a less orderly manner, with rectilinear and all sorts of other non-periodic movements. Elements in their 'subterranean' mode belong to matter as unformed, primeval chaos.[66] Proclus juxtaposes the mixed condition of ordinary terrestrial life with the equally mixed state of human soul, where reason struggles with the animal impulses.

> Furthermore the soul is a single entity (*mian*) and possesses (*echei*) within herself both the divine nature (*to theion*) and the irrational (*alogon*); and the divine aspect of soul embraces (*periechei*) the irrational powers in a rational fashion (*alogous dynameis logikôs*) by which it can direct (*kateuthynei*) and order the irrational in a suitable manner. And neither is the unity of the soul destroyed by the different essences in her, nor is the diversity by the unity, for these powers exist differently in the better aspect and differently in the worse. (Proclus, *In Tim.*, 2.47.28–33)

Proclus' theory of the many modes of the Elements takes into account the empirical evidence, but is founded in the general theory of being. Sensory evidence is anecdotal, relies on transient events, and is subject to illusion. The study of being, on the other hand, requires reflective reasoning and testing before it arrives at a conclusion. So, the 'summits' and 'sediments' of the Elements are part of his vocabulary of general ontology. Indeed, the whole theory is but the systematic application of the central canons of his philosophy.

His natural philosophy benefits from the tight integration of physics and metaphysics in two ways. First, he eliminates the essential differences between the heavenly and the sublunary realms. This was one obstacle to the progress of Greek science since Aristotle. Proclus looks for a theory of universal physics. Celestial and terrestrial bodies differ only in grades and modes. Their basic constituents, the Elements, are the same.

Secondly, his natural philosophy has a wide explanatory range. On the one hand, it preserves the unity of the physical world. On the other, it employs a sophisticated combination of primary properties for the description of physical phenomena and substances. Things can be hot or purely luminous, vital or burning, heavy or purely solid, tenuous but still visible, light as air and dense as water, both immaterial and opaque. Proclus' theory of the Elements is pioneering, because he dares to question the limited range of properties attributed to them by previous Greek philosophers, and does not take refuge in an infinite variety of basic constituents (the Atomists). As he declares:

> The differences in the Elements being so great, why should it necessarily upset the teaching, which appears to say that the Elements exist only in one mode (*hôs monachôs*)? For it is necessary to view the Elements in as many different ways as there are levels between the Creator and the sublunaries . . . Hence the Elements are in heaven but not in the same mode (*ou touton ton tropon*) as in the bodies appropriate to generation; and, in turn, neither are those in heaven in the same mode as in the Creator . . . but they abound differently in different places (*alla allachou pleonazein*). (Proclus, *In Tim.*, 2.47.2–9; 47.12–13)

Light

From Plotinus' interpretation of Plato's metaphysics, Neo-Platonists inherited the idea that all grades of being and value emanate from the One like sunlight radiates from the sun without the weakening the source. In physics, Plotinus saw light primarily as an incorporeal activity (Plotinus, *Enn.*, 4.5.6–7). In this respect he followed Aristotle.[67] Plato, however, saw light as something corporeal, like the Presocratic 'physicists'. Light is tenuous, illuminating Fire, and is not necessarily hot. For Plato, the celestial bodies have the same kind of luminosity as the terrestrial fires.[68] Plotinus did not regard these views as inconsistent. Incorporeal is the radiated light. The light source is a body (Plotinus, *Enn.*, 2.1.7).

At first reading, Proclus seems to hold these views; but there is a crucial difference. Incorporeal is the light that shines only among the intelligibles. Among the sensibles shines the sensible, perceptible light, which is extended and corporeal. Yet again, the physical and metaphysical aspects of his philosophy cohere but are kept distinct according to the hierarchical system of explanation. Moreover, his conception of light does not submit to dualism.

The first mode of light is the divine. This is the light emanating from the One God. It penetrates to all the levels of the universe, and insures their 'salvation', that there is a goodness in everything. In every entity lofty or lowly, eternal or temporal, rational or irrational, living or inanimate, there is a unity which is the centre of its being. In every such unity there is a light: the light of God in every one.

From the One radiate the many levels of being, each with its own kind of light. So there are intelligible, psychical, supra-physical kinds of light, as well the physical modes, that is, the pure light of cosmic space and the visible light in the heavens and on earth. The One is the divine sun. The intellective sun is the Creator. The supra-cosmic sun which shines in the median levels (Soul, Nature) is personified in Apollo. Finally there is the sun as we normally see it. Behind the visible sun lie the metaphysical, invisible suns, which give it power and sustenance.

Corporeal light begins with body in its pure state, space. It is an unmixed corporeal light. Proclus calls it an immaterial body in the superlative. It is the 'first body' of the world-soul. Such a most tenuous (*leptotaton*) light is impassive (*apathes*), extended in interval (*diastêma*) and capable of penetration (*chôrein*) – the three criteria for space. It is also imperishable (*aphtharton*), the main requirement for the vehicle of soul. However, it is invisible, for it has nothing to resist it and make it perceptible (according to Proclus' theory of vision).

> For Fire itself by itself (*auto kath' heauto*) by being unmixed (*amiges*) with other Elements is in no way perceptible by the visual sense (*oudamôs horaton*) but is perceived solely by the intellect (*monon epinoeitai*). (Proclus, *In Tim.*, 2.8.14–16)

The light of the celestial bodies shares in the imperishability of the unmixed light of cosmic space. However, it has bulk. Fire has a resisting Earth mixed with it. Celestial light is thus fully visible. The light of the material and perishable world is that of ordinary experience. It is certainly visible and mixed. It is perishable, in that, like a man-made fire, there are times when it ceases to be. Since such light emanates from earthy fires, it is usually accompanied by properties of gross matter, heat and burning.[69]

Sometimes Proclus refers to the corporeal, physical light as 'a species of Fire' (*eidos on pyros*), a paraphrase of Plato's *Timaeus* 58c. In support of it, he calls attention to the similarity between the figures associated with them. Light radiates in cone-shaped beams, and Fire has a pyramidal-shaped particle. If we watch the sunlight as it streams through thin clouds or as it emanates from a reflecting mirror, the cone of light is clear. In fact, the cone of light is central to the physics of radiation. According to modern physics, radiation (light/electromagnetic waves and other field-forces) spreads in three dimensions. From the conservation of energy radiated through volume angles, we arrive at Newton's inverse square law of gravity (and other radiated forms of energy). As for Proclus' Fire particles, they are, as we have seen, four-faced solids, triangular pyramids. The implication, then, is that the light-cones are the pyramids of Fire with their sides and faces curved. We may presume that this links with Proclus' statement that the polyhedral particles of the sublunary Elements 'bend' or 'curve' when they approach the spherical heavens (see section 2 above, Proclus against Aristotle, Objection 7):

> For the eye is the most elevated of the sensory organs as Fire is the highest of the Elements and exhibits acute-angled activities (*oxeiais energeiais*) like the first, for the conical shape of the visual emission has no small similarity to the pyramidal shape of Fire. (Proclus, *In Tim.*, 2.8.8–13)

All the above re-emphasises that light has a special place in Proclus' Neo-Platonism. It is so special that it often appears to be apart from our sensible world. Simplicius takes Proclus to task on this point. On the one hand, light is a species of Fire, but on the other, it is the most immaterial of Elements and the most incorporeal kind of Fire. That is, it is something more than Fire.

> If light is a species of Fire, as we have learned from the *Timaeus*, and the species is not superior to the genus, light would not be superior to Fire, as against what is said by Proclus . . . But perhaps it refers to the luminous vehicle (*augoeides ochêma*) of the world soul, as Porphyry interpreted it, though it could also refer to something else. For when the Oracles say that the Soul which is the primal source (*pêgaian psychên*) 'on high animates the light, fire, aether and the worlds', meaning that light is different from the empyrean, aethereal and the material domains, and that it is above all others, this could be understood in terms of division by dichotomy (*antidiaireseôs*). (Simplicius, *In Phys.*, 615.28–616.3)

What can we make of Simplicius' argument? What is the 'dichotomy'? A thorough reading of Proclus' works does reveal the original source of Simplicius' comment: Proclus' *Commentary on the Republic*. There, Proclus explains that the primary distinction between light and the other

Elements is that between something unmoved and something moved. This is precisely the 'dichotomy' to which Simplicius is referring so obscurely: on the one side is what is unmoved and unchanging, light, and on the other, those which are moved. They are: fire, aether (as an intermediary) and the 'worlds', the material realms as a whole (from the Chaldaean Oracles).

> But light is different from all the others and is superior and prior to all others, which are said to be animated by the primal source-soul. This shows, I believe, that light is a body different from the worlds, aether and fire . . . But if the empyrean is the first-most of the moved [i.e. the celestial bodies], clearly light is unmoved by being given an order above fire; and as the aether holds (*synechei*) the material worlds, and the empyrean embraces both the material worlds and the aether, so light holds all (*panta*). (Proclus, *In Rep.*, 2.201.21–9)

The repeated references to the supra-elemental status of light ultimately point to its divine origin, the One. Does this mean that Proclus' light is in effect a fifth, or 'first' Element in the Aristotelian sense? Yes, in the context of the metaphysical distinction: exempt principle vs the correlated; between imparticipable vs participable universal. Simplicius admits that such an interpretation would agree with Proclus' thought; in the same passage, he continues:

> But perhaps light is the monad of the triad of the worlds, which he [viz. Proclus] confesses. It is a monad not in the sense of being the place (*ouch hôs topos*) of the three, but in the sense of being a single cosmic order prior to the three. For there must be one prior to the three, just as the three are prior to the seven. And perhaps he called this monad 'light', for being both the flower of the empyrean firmament (*anthos tou empyriou stereômatos*) and the common element of the visible and phenomenal, sensible, corporeal universe (*sômatikou pantos*). (Simplicius, *In Phys.*, 616.4–9)

In conclusion, when we take into account what Proclus really means by 'aether', etc., we gain a clearer understanding of his fourfold 'Chaldaean' arrangement. It points to the cosmic order: light; heavenly Fire; sublunary Fire, Air, Water and Earth.

5. PROCLUS' THEORY OF MOTION OF THE ELEMENTS

Proclus sets out his theory of motion for the 'simple bodies' of the four Elements, as below. This seemingly Aristotelian theorem is in fact the final rejection of Aristotle's rectilinear movements for the four Elements. It is also refreshingly new. It is not Plato's theory of motion for the Elements either.

> Every simple body (*sôma haploun*) which is in its own proper place (*oikeiôi topôi*) either remains stationary, or is moved in a circle; for if it moves in a different/alien manner (*allôs*), either it is no longer in its own place (*ouketi estai en tôi autôi topôi*), or it is not yet in it (*oupô estin en autôi*). (Proclus, *In Tim.*, 2.11.27–31)

For Proclus, the true state of motion of the Elements is either circular by imitation of the cosmic circumference, the heavens, or stationary like the cosmic centre, the earth. The upward movement of Fire and Air and the downward movement of Water and Earth (Aristotle's theory) are not their proper, natural ones. They belong to those particles that are not in their own natural place and are *in the course* of going towards them. Particles moving perpendicularly move in a manner which is *contrary* to their own proper state of motion.

> When Fire is carried upwards it is because it is in a foreign place (*en allotriôi topôi*) and hence is carried to its own place, and likewise a lump of Earth (*bôlos*) is moved downwards and in general the tendencies of the Elements to move in a straight line are those whose condition is contrary to nature (*para physin*). Therefore it is false to say that Fire is naturally moved upwards (*kata physin*). For it only has its own natural motion whenever it occupies its own natural place, but when it tends to move towards it, it does not occupy it yet. (Proclus, *In Tim.*, 2.12.3–8)

With this theory, Proclus aims to explain with a single rule both the celestial circular movements and the sublunary rectilinear. At the same time, he nullifies the need for a separate Element for the heavens. He also does away with the requirement for a separate motion. So he reunites the whole of the visible world with one coherent law of physics.

He achieves it by reducing, on the one hand, the importance of the qualities of weight (*barytês*) and lightness (*kouphotês*) as absolute properties, and by enhancing, on the other, those of natural place. Movements normally associated with recession from or advancement to such places, viz. the upward and downward, are contrary to the true nature of the Elements. The only kinds of motion which are truly natural are those pertaining to a sphere: either revolving at different radii, or being at rest at the centre. In a sense, Proclus' theory of motion is the nascent formulation of potential and kinetic energy, where physical things move when removed either from their stable orbits or place of rest.

This conception of movement relates to Proclus' other ontological tenets. It accords with the dynamics of procession and return. Perfect entities at their own level are either unmoved (e.g. Intellect) or moved circularly (e.g. Soul). Only when there is substantial change, such as when the soul descends to or ascends from matter, might they be thought of as moving away from, or towards, their own proper state of being. Secondly, it accords with the general rule that things behave differently at different 'places', levels. Remember the modalities of the Elements.

> And we must not be afraid of those who are especially skilled in dialectic (the Aristotelians) who by looking at some small detail of Nature believe that they can ridicule Plato, who say that Fire is moved upwards whereas the stars are moved in a circle; for these opinions are invalid in the case of heavenly Fire. For just as the intelligible Fire . . . does not have the same kind of movement as the corporeal, so neither does the celestial Fire have the same as the subcelestial; for the type of movement exists in accordance (*synyparchousi*) with the order of the substantive realities. (Proclus, *In Tim.*, 3.114.6–15)

Simplicius tells us that one of the later Aristotelians, Xenarchus (first century BC), had initiated the debate of natural motion with regard to natural place, as a criticism of Aristotle's Aether, and had proposed the above solution. Simplicius cites two other great thinkers who had promulgated the view that the Elements should either move circularly or be at rest, and, interestingly enough, Proclus also mentions them: Ptolemy and Plotinus.[70] So what did they have to say?

Here there are problems. Of the two works of Ptolemy's quoted by Simplicius, *On the Elements* (*Peri tôn Stoicheiôn*) is unfortunately lost. The other, *The Optics*, survives thanks to the Arabs, but not complete. The most likely source for such a theorem is the first part, which deals with the theory behind the mathematics of refraction, reflection etc., which are developed in the second part. But the first, theoretical, part is sadly lost. However, we have more luck with Plotinus. The relevant passage is extant in the Second *Ennead* (2.2.1). Here Plotinus discusses how Fire rises to the heavens seeking its own place. Alas, on closer examination he concludes that when Fire reaches the outermost place of the world and can no longer move rectilinearly, it begins to glide *under* the heavenly arch in circular fashion imitating the heavens. Such circular motion is not inherent, unlike Proclus' proposal, and when we read the whole section Plotinus suggests that Soul alone has circular natural motion, not Body.

There are further problems. If we consult the slim volume of Proclus'

Elements of Physics, or, as it was known in the Middle Ages and the Renaissance, *de Motu*, we find definitions which declare unambiguously Aristotle's theorems on elemental rectilinear motion.[71] Is Proclus contradicting himself? The answer is to be found in the context and aim of his works. As we have seen in Chapter 3, Proclus taught Aristotle as part of the curriculum. The *Elements of Physics* is nothing more than an excellent and faithful primer of Aristotle's theory of motion based on the *Physics* and *On the Heavens*. It is Neo-Platonic only in a limited sense: it is written and arranged by a Neo-Platonist with the educational 'scope' to show how Aristotle's theory of motion leads to an immaterial prime mover.[72]

On the other hand, Proclus' *Commentary on Plato's Timaeus* is not a teaching primer (more than 1,200 pages of Commentary for forty-four pages of the *Timaeus*). It is an extensive reinterpretation of past ideas in the light of his own. It is, in effect, a dissertation of his philosophical and physical doctrines which uses Plato's work as a framework.

How did Proclus' theory fare later? Simplicius followed a slightly different theory. As we have seen, its roots can be found in Proclus, and in the Neo-Platonic scheme of 'superior' and 'inferior' levels of being and power – which is also a source for the impetus theory. The circular movement of the Elements and the 'combustible material' is neither completely natural nor contrary to nature. Rather, it is as 'supra-natural' and 'superior' as the celestial bodies. This variation does not contradict Aristotle directly: therefore it may have provided a better harmonisation. It also fits with Damascius' and Simplicius' known concern with transcendents. This is in essence the version adopted by John Philoponus, when he went on to argue against Proclus' original theory.[73] But earlier, some Alexandrian associated with Philoponus (*In de Anima*, 65.38) seems to have accepted Proclus' theory in the *Commentary on Plato's Timaeus.* However, because of insufficient reading of the Neo-Platonic sources, it is Philoponus, rather than Proclus, who is usually credited with the demolition of Aristotle's barrier between the celestial and sublunary realms.

6. SPACE, BODY AND MATTER

Proclus' theory of space stands at the forefront of Greek philosophy and science. The place of things is a pure body extended in three dimensions. There is a place for all the corporeal universe, which is cosmic space. Space, the true place (*to diastêma kai ho alêthôs topos*), is a body of light.[74]

Greek philosophers linked space, place and matter intimately but kept them distinct. For Plato, the creation of the world involves Forms that are its model-paradigms, and a universal 'receptacle', in which things are made. Like the Forms, the 'receptacle' is indestructible and cannot be perceived with the senses. Unlike the Forms, it is not real, has no determinate properties whatsoever, and cannot be apprehended by reason. We can only grasp it by a sort of 'bastard reasoning', when we infer that created things must exist in 'some place' and occupy 'some room' (*chôran tina*) (*Timaeus* 52a–c). In retrospect, this came to seen as the first articulation of space. Aristotle also had a substrate for the generation of things: 'matter'. Aristotelian matter was individual to things. For example, living beings have a biological material body, statues have metal or stone as matter, and mathematical objects have an 'intelligible' matter, an extension in thought (*Metaph.* 7: 1036a9–1037a23). The elementary qualities, dry, hot, cold, moist, have a matter fitting to their fundamental state: prime matter. This, Aristotle thought (*Phys.* 4: 209b), was what Plato had struggled to express by his 'receptacle'. Like other post-Aristotelian Platonists, Plotinus accepted the identification of Plato's receptacle with Aristotle's secondary matter, that which supports things perceived with the senses (*Enn.* 2.4.6 and 11). Despite the many similarities, Platonic space and Aristotelian matter were very different. Aristotelian matter is what a thing is made of, and is the steady subject for its changes; Platonic space is the container in which generation takes place. Aristotelian matter has no volume and dimension; Platonic space does. For Aristotle, place is a predicate of substrate-matter; there is no universal place, for there are only individual bodies. Place is but the boundary of what a body occupies. In fact, we can see the arguments on place in the context of the debate on what the 'forms' are, and the nature of mathematics and physics.

Our main source for Proclus' theory of place and space is Simplicius' lengthy excursus in the *Commentary on Aristotle's Physics.* In this 'Corollary on Place', Simplicius gives accounts and critiques of past and contemporary definitions, laid out as an exhaustive Platonic division. Proclus stands out immediately at the first branching. The 'theory was propounded with great originality by Proclus, the Lycian philosopher, who was the teacher of our teachers. Of all whom we know, he was the only one who elected to say that place is a body' (Simplicius, *In Phys.* 611.10–14).

Proclus, along with many earlier post-Aristotelians, rejects Aristotle's view of place as the (two-dimensional) boundary of body. Place is the space-interval (*diastêma*) between the boundary. Proclus arrives at this by finding Aristotle's conception of place inconsistent with physics. If one follows Aristotle's analysis that place is either the body's form, matter, the limit of the body as a container, or the interval between the boundary, there is a counter-example, the rotation of the heavens, which contradicts Aristotle's chosen option of place as the unmoved boundary of a contained body (Simplicius, *In Phys.* 607). This leaves open only the option that place is the space-interval. Finding problems with Aristotle's physics was nothing new. Even some of Aristotle's own successors disagreed with his views on place, among many physical theories. Besides, as Simplicius points out, Aristotle's analysis does not exhaust the possible ways of thinking about place.

Proclus offers also a more positive argument. Place is the interval between the boundaries of a body. This space is extended in three dimensions just like a body. Space must be a body, because in order to be the place of bodies, it has to be some sort of body itself. Only quantities of the same kind are commensurable.

> But if it were incorporeal, it would be absurd, for place must be equal (*ison*) to the objects that reside in place (*tôi en topôi*), but how could body and incorporeality be equal? For equality exists only between quantities (*en posois*), and in particular in quantities of the same kind or genus (*homogenesi posois*), such as between lines and lines, surfaces and surfaces, and between bodies and bodies. Therefore spatial extension is a body, since place is indeed space-extension (*diastêma ho topos*). (Simplicius, *In Phys.*, 611.35–612.1)

Where does all this come from? It is based on Aristotle's theory of categories (which Neo-Platonists accepted as valid after Porphyry's programme of 'harmonisation'). In Aristotle's system of classification, place (*topos*) is under the category of quantity (*Categ.* 5a). Moreover, only body-quantities can be measured, compared and equated, or not; as long they are quantities of the same kind (Aristotle, *Categ.* 6a25–30). Of course, 'body' can take the extended meaning of 'solid'; for example, the mathematical solid. So Aristotle was wary of the definition of 'body' as 'that which has three dimensions' (*Top.* 142b24–5), because it is too general. It does not refer to a specific body (e.g. biological, mathematical). Nevertheless, body in general is quantity extended in three dimensions.[75] Thus, for Proclus, space is a three-dimensional quantity, that is, some kind of body.

Such a conclusion immediately raises a host of questions. What kind of body is place? How can it be a body at all? According to the Aristotelian exclusion principle, different bodies cannot occupy the same place at the same time. If the place of bodies is itself corporeal, bodies could never occupy such place.[76] The former would exclude the latter. So the place of bodies could not itself be a body.

Before Proclus, Iamblichus had bypassed the problem by making space an incorporeal power: the medium of the world-soul, which binds the parts of the universe together in their proper places. After Proclus, John Philoponus got around it by making place an incorporeal void space. But Proclus chose to grasp the problem by the horns. As he saw it, the crux of the difficulty is how bodies interact with one another.

There are bodies, notably the mathematical, which have no problem coexisting in the same place at the same time. Proclus concludes that matter must be what lies at the root of the mutual susceptibility and division when bodies come to penetrate one another. Material bodies push each other away; they break up when pushed together. If place is an 'immaterial' body, another body can occupy and coexist with it. The two bodies remain 'impassive', impervious, and retain their distinct integrity.

> Therefore, place is an indivisible body (*adiaireton sôma*). And if it is indivisible it would be either an immaterial or a material body (*enylon*). But if it were material, it would not be indivisible; for all material bodies undergo division when other material bodies penetrate them (*chôrountôn*), as when our body is immersed in water. Only immaterial objects cannot be divided by anything and this is so by necessity; for every immaterial body is impassive (*pan gar sôma aylon apathes*), but every divisible object is not impassive; for division is an attribute (*pathos*) of bodies which destroys unity, since you will not discover even in a continuum, in its capacity of being continuous, any other influence except that which separates and destroys the unity. (Simplicius, *In Phys.*, 612.16–24)

> The immaterial body . . . neither exerts resistance nor experiences counter-resistance (*oude antereidei oute antereidetai*); for that which experiences resistance has the nature of being able to suffer by those who exert resistance (*paschein tôn antereidontôn dynamenên*). (Simplicius, *In Phys.*, 613.15–17)

What is Proclus' 'immaterial' body? As we have seen earlier in the sections on the matter of the celestial bodies and light, it does not refer to the absolute lack of matter as a universal power. Nor does Proclus consider place to be purely mathematical and abstract. Space is a physical thing. With his Neo-Platonic metaphysical theory of the many levels of being, Proclus admits degrees of materiality, and can define immaterial and material kinds of body. The matter of physical bodies refers to matter endowed with tangible resistance and density. Physical bodies, as we normally experience them, have matter in the sense that we can see, touch and weigh them. The more 'bulky', dense, they are, the more they make their presence felt to our senses and to other bodies. This is the matter proper to the 'visible and tangible' level, where the Elements are mixed with Earth, have weight, etc. In modern terms, we may call it mass-matter. Inertial mass is the measure of a body's resistance to changes in movement. Gravitational mass is the measure of a body's weight. Mass is proportional to volume and density, which tells us how packed a body is. Thus we may understand Proclus' space as 'immaterial' in the sense that it lacks the mass typical of earthy and celestial bodies.

Proclus advances on Aristotle in another significant respect. Place is not limited to individual, particular bodies. There is a place for the entire physical universe. As a Platonist, he can conceive of a universal 'room' and place. This is cosmic space. It is the 'true place' because material bodies park in different spaces (plural), but the cosmos occupies one place only, space as a whole. He goes even further. In trying to describe what cosmic space might be like, he tells us more positively what is his 'immaterial' body. His remarkable conclusion is that the fabric of space is none other than pure physical light.

Universal space is more tenuous than the matter of all visible bodies, including the celestial.[77] Thus Proclus sometimes calls it 'supra-celestial', and refers to it in superlative terms: 'most simple', 'most immaterial'. The celestial bodies are immaterial in an intermediate sense. They do not have the state of matter typical of earthy bodies (which, as we now know, is also true of the stars), but they are not massless either. Space is massless light. For Proclus, this light (in modern terms we would call it energy) is unlike that of the celestial bodies, which is visible and can be eclipsed. The light of space is not mixed with Earth Element, and therefore is invisible and intangible. It has no mass-resistance. It fills every part of the cosmos. Even the possible interstitial void between particles would drown in the sea of light. It diffuses through all without affecting them or being affected. In fact, according to modern physics, particles that carry fundamental forces to infinite range and penetrate through all cosmic bodies must have zero mass.

> I mean by 'immaterial' and 'material' that with reference to the most gross matter (*pachytatên hylên*) which cannot sustain delimited forms and which stands apart (*diistas*) from that matter which remains always in its own proper form and in the same manner; because we learn that this matter pervades (*diêkein*) through all the cosmos, just as the gods say; hence Plato proceeds to call matter the receptacle of the universe (*pantos hypodochên*) [cf., of the generated world: Plato, *Tim.* 51a] (Proclus, *In Tim.*, 2.10.4–9)

> Earlier we demonstrated both that body passes through body and that not all bodies suffer this, but the immaterial ones go through material, and immaterial go through immaterial. By matter I mean the last-ultimate matter which underlies the lowest bodies (*tois eschatois sômasin hypokeimenên*). But there are also some bodies intermediate between the material and the immaterial, which submit to being affected by the material in respect to each other, not being able to pass through each other in an undivided manner. Therefore not even the solar light, being a body (*sôma*), passes through the body of the moon. For the deflection (*klasis*) of the solar light and the shadow – for the moon also makes shadows – make evident their kinship to material things. Not even our vehicle (*ochêma to hêmeteron*) passes through material masses (*ogkôn*). For this is also intermediate between the material and the immaterial. But this and the solar light pass through the body of the heavens, which remains undivided in itself. For every division is an affection which destroys the continuity of what is being divided. (Proclus, *In Rep.*, 2.162.24–2.163.8)

> Summing up all the arguments, place is thus an unmoved, indivisible, immaterial body. If it is such, it evidently is more immaterial than all the bodies which move [the celestial bodies] . . . Consequently, as light is the simplest (*haploustaton*) of all these . . . clearly universal place will be light, the purest (*eilikrinestaton*) among bodies. Let us conceive two spheres, one made of light alone and the other of many bodies, both equal in volume (*kata ton ogkon*). The former is placed homocentrically with the universe and the other is immersed in it. The whole cosmos will thus be seen moving in the unmoved light. As a whole it will be unmoved, so as to imitate place, but each of its parts will be moving in relation to each other, so that in this respect, the world will be less than universal place. (Simplicius, *In Phys.*, 612.24–35)

Syrianus, Proclus' teacher, had already conceived the idea that two bodies can occupy the same place, if at least one is immaterial in the sense that light is. Beams of light when crossed do not disturb each other. Syrianus had also suggested that such beams are no less corporeal, for they are still three-dimensional entities.[78]

Proclus and Philoponus on space

How strongly corporeal is Proclus' place-space? We may compare it against another theory of place as three-dimensional space, that of John Philoponus. In many respects they are the same. Place is the spatial extension between the boundaries of body (contra Aristotle). It is three-dimensional. It is immovable, and remains undivided when physical bodies come to occupy it. It can be distinguished from material bodies. There is a cosmic space for all the bodies of the universe.

For Philoponus, however, place is an incorporeal void. As a void it lacks qualities, which inhibit bodies being present in a place. Since qualities reside in quantities, that is, bodies, when a body departs from a place, what is left behind must be a space empty of body. Space has only a 'substantial quantity', which is three-dimensional extension (Philoponus, *Contra Proclum*, 424.4–11). A body in place is, in effect, a compound of matter and space-extension. This space-extension is the three-dimensional void. Philoponus also speculated (and in *Contra Proclum*, 424.9) that space is the essence (*ousia*) of body, which is independent from the physical bodies that reside in it. Space is a three-dimensional bulk but is indeterminate in magnitude, in that it is as large or small as the body that occupies it.

All this leads us to ask the converse question. How strongly incorporeal is Philoponus' space? Space is never actually void of bodies. As an Aristotelian compound, a body cannot exist without its space, any more than matter can be without form. Philoponus goes as far as to say that a space does not exist by itself because the 'force of vacuum' (*kenou bia*) does not allow it. As one body leaves, another comes to occupy the place. So void space is inseparable from body, and never actually 'void' of body. Further, the incorporeal, indeterminate void has a boundary, which coincides with the boundary of the outermost body.[79] The boundary of body determines the boundary of empty space.

If we examine the two conceptions of space property-by-property, we find they converge. First, place is space-extension (*diastêma*) between the boundaries of body, for identical anti-Aristotelian reasons. Secondly, place as space is separable from physical body. For Proclus, place is what is left behind after a body has moved on. Space must be some kind of body, that is, must have three-dimensionality, extension and shape in order to tally with the bodies of which it is the place. For Philoponus, place is also what is left behind, but this leads him to conclude that it must be an incorporeal void. However, because Philoponus' space is an emptiness, he has to account separately for how it comes to have properties, for example shape and three-dimensionality (Simplicius, *In Phys.*, 615.1–4: void has no dimensions because it is just a privation). Consequently, he sees space as actually never separable from bodies (Philoponus, *In Phys.*, 623.11ff.). Space exists only logically as a substrate of bodies, in a revised version of

Aristotle's categories. Place is actually neither incorporeal nor a void. Thirdly, place-space is unmoved. For Proclus, if place were to move it would have to move with respect to some place, and so on to infinite regress. For Philoponus, place-space is incorporeal and so has no physical properties, such as movement. Fourthly, place-space remains undivided when bodies penetrate it. For Proclus, as we have seen, penetration and division concern resistance and the ability to be affected. So, Proclus relegates the problem to 'immateriality'. Space lacks the mass-matter of ordinary bodies. But this raises the question of what is an 'immaterial body'. Philoponus offers a contrary solution, but the result is the same. Place-space is an incorporeal void because it must remain unaffected by anything physical (Philoponus, *In Phys.*, 558ff.). However, Philoponus says that body is a compound of space and matter (*In Phys.*, 559.10), and confirms that body's matter is responsible for division (*In Phys.*, 687.30–688.9). It is to avoid the interaction between bodies, which are composed of form and matter (according to Aristotelian physics), that place-space must be incorporeal and immaterial.

So, Proclus' space functions in much the same way as that of Philoponus, except that it is 'immaterial' for the one, and 'incorporeal' for the other. However, to readers who approach the problem through Aristotle's physics, such a distinction falls flat. There can be no body without matter. This is evident in ancient readers of Proclus, too. Simplicius, in his *Commentary on Aristotle's Physics*, treats immateriality as synonymous with incorporeality when he tries to explain Proclus' 'immaterial body'. He refers to it as having 'incorporeal nature' (*asômaton physin*) (Simplicius, *In Phys.*, 615.3), whose luminous substance, Fire, is 'more incorporeal (*pyr asômatôteron*) than the other elements' (*In Phys.*, 615.26), and light itself is the most incorporeal of the species of Fire.

On the other hand, Proclus' teacher, Syrianus, has no problem talking of light as an 'immaterial' thing with three physical dimensions. He goes to great lengths to refute the criticism that such an immaterial body can only be mathematical and subsist in thought (Syrianus, *In Metaph.*, 84.27–86.7).

The difference between Syrianus and Simplicius, both Athenian Neo-Platonists (but flourishing a century apart), is that the former discusses body and matter in the context of metaphysics and Plato's *Timaeus*, and the latter in the context of Aristotle's physics. This is, I suggest, why Proclus' 'immaterial body' fits with the one, but stands out in the other. From an Aristotelian perspective, place as an 'immaterial body' is very odd, if not absurd. But from a Platonic-Pythagorean perspective, it makes some sense, because 'matter' may refer to gross things, 'body' to three-dimensional volume, and space to the universal receptacle. Indeed, it is in this context that Syrianus provokes the reader to consider that the corpuscular solids of the four Elements 'hint at active and creative powers of nature' (see section 3, on bodies and powers). Space is *not* a kind of substrate, and is not akin to matter.

In Neo-Platonic metaphysics, space is extended in three dimensions etc., because of the scheme of 'procession'. Light, the substance of space, originates in the One God. As it radiates, it expands from unity to multiplicity, from a state of wholeness to that of particularity. As we saw in Chapter 3, the section on the corporeal level, Body is the stage in the 'procession' where Being is parcelled out and separated in intervals of time and space. Simultaneously, beings become filled out. Light is everywhere, but in an appropriate mode. Space-light has shape and outline: both corporeal features. But this is not space as a substrate for bodies, for it appears in the procession *before* the particular bodies. Space is an active cause distributing bodies to the places proper to them.

> The gods tell us to consider the extended shape of light. For although it is without shape above (*anô amorphôtos*) it becomes shaped (*memorphômenê*) through the procession (*proodon*). (Proclus, *In Crat.*, 31.12–14)

Simplicius repeats this in his assessment of Proclus' conception of space.

> Proclus says that in light shapeless things (*atypôta*) acquire shape, according to the Oracles. And because of that it may well be said that it is called 'place' (*topon*) of the whole cosmic body, because it is of a certain 'shape' (*typon*), making things without dimension (*adiastata*) become extended (*diistasthai*). (Simplicius, *In Phys.*, 613.7–10)

> And if you should wish to inquire into the actual movement (*kat' energeian kinêsin*) of place, you will see that place is the cause of movement of the moving bodies, which unfold (*exelittontôn*) the parts of place as spatial extensions (*diastêmatikôs*) . . . In this respect place is an intermediary to soul. (Simplicius, *In Phys.*, 613.27–9)

Proclus' place-space thus diverges completely from space as an incorporeal void. For the Christian John Philoponus, the Creator alone reserves the power to put things in their proper places. Place-space has no intrinsic power (*dynamis*), and 'it is ridiculous to say that' (Philoponus, *In Phys.*, 581.18–31). The ones who are being 'ridiculous' are Neo-Platonists, like Iamblichus, Syrianus and Proclus, for whom the Creator acts on bodies through more appropriate, mediating principles, the world soul and space. For Philoponus, place-space has only the 'force' of void, but this is an action external to place itself. Place is a substrate supporting physical body.

For Proclus, place-space is not 'under' bodies. Metaphysically, it is 'above' body. On a cosmic scale, space is the 'subtle', luminous vehicle of the world soul, mediating between world soul and physical body. It receives the 'irradiations' of the forms issued by the Creator to the world soul (cf. Syrianus, reported by Simplicius, *In Phys.*, 618.28–619.2), and is responsible for distributing the divine 'lots' and proper places of physical bodies, including the 'simple bodies' of the four Elements.

Space does not have all the properties of soul, 'incorporeal and unchanging' (Proclus apud Simplicius, *In Phys.*, 613.36–614.1), and 'separable' from one's substrate (Proclus, *In Rep.*, 2.198.8). Soul's substrate is the body. On the other hand, space does not have all the properties of material body, 'corporeal and changing' (Simplicius, ibid.), and 'inseparable' from one's substrate (Proclus, *In Rep.*, 2.198.11–13). Body's substrate is matter (*El. Th.*, prop. 72). Space has something of each. It is separable from bodies (which come and go out of place) and unchanging, but is corporeal. Space is thus something 'lower' than soul, but 'higher' than the material body. It is the proximate link of body to the totally incorporeal states of existence: ultimately to the divine. This would agree with the Iamblichean theory that salvation must include body and matter. Above all, contrary to the uninformed stereotype of Neo-Platonism, Proclus regards matter and physical nature positively, and worthy of philosophical interest. There are no worthless outcasts. Everything has a value.

> Nothing is so unworthy (*atimon*) or trivial (*phaulon*) as not to participate in the Good and draw its origin from above. Even matter, if you consider it, you will find to be good, and evil (*kakon*) itself turns out to have good in it, to be incapable of existing otherwise than by carrying a tinge of the Good and partaking of it in some way. But popular opinion is ashamed to attach the existence of cheap and insignificant things to the divine cause, for it looks at their nature, not at the power of that cause, and does not consider that a cause capable of creating the greater things is all the more able to bring lesser things into being, as the Athenian Stranger says somewhere [Plato, *Laws*, X 902e]. But genuine philosophers regard all things in the cosmos, great and small, as dependent on providence; they see nothing unworthy or rejected (*apoblêton*) in the House of Deus. (Proclus, *In Parm.*, 835.12–28)

NOTES

1. Neo-Platonists' 'irrational belief in the ultimate unity of the cosmos' (sic): Sambursky, *The Physical World of Late Antiquity*, p. xii.
2. For the Empedoclean background, see J. J. Longrigg, 'The roots of all things', *Isis* 67 (1976), 420–38. For Plato's Elements as the ABC of the universe, 'stoicheia tou pantos', also *Tim.* 48b. For an important analysis of what constitutes a 'letter', 'syllable' and 'word' in Plato's theory of the Elements, A. E. Taylor, *A Commentary on Plato's Timaeus*, pp. 306–9.
3. Plato's theory of the Elements: *Tim.* 47e–69b; on the construction of the solids, 53c–55c. There are a number of studies on it, ranging from the examination of the geometry to the epistemology. See Taylor, *A Commentary on the Timaeus*, pp. 305–491; F. M. Cornford, *Plato's Cosmology* (London, 1937), pp. 160–239; P. Friedländer, *Plato: An Introduction*; G. Vlastos, *Plato's Universe*: C. Mugler, *La Physique de Platon* (Paris, 1960). On the geometrical foundation of the Elements and the theory of transformation, see P. Friedländer, 'Structure and destruction of the atom according to Plato's *Timaeus*', *University of California Publications in Philosophy* 16 (1949), pp. 225–48; E. M. Bruins, 'La chimie du Timée', *Revue de Métaphysique et de Morale* 56 (1951), 269–82; G. Vlastos, 'Plato's supposed theory of irregular atomic figures', *Isis* 58 (1967). On the philosophical aspects, see R. J. Mortley, 'Primary particles and secondary qualities in Plato's *Timaeus*', *Apeiron* 2.1 (1967), 15–17; W. Pohle, 'The mathematical foundations of Plato's atomic physics', *Isis* 62 (1971), 34–46; W. Pohle, 'Dimensional concepts and the interpretation of Plato's physics', *Phronesis* Suppl. 1 (1973), 306–23. The ultimate principles in a reductive process are the two 'elementary' triangles, which are the *archai*; see *Tim.* 53d, 54de. See also R. Falus, 'L'Enigme "du plus beau triangle" ', *Acta Antiqua Academiae Scientiarum Hungaricae* 26 (1978), 405–22.
4. Vlastos, *Plato's Universe*, pp. 70–2.
5. Plato, *Tim.* 56d, 60b–d
6. See description in *Tim.* 54e–55c; cf. 56a. By Taylor, *Commentary on Tim.*, p. 375, the solid angle of the Fire polyhedra is equal to 180 degrees (contra Bury in the Loeb edition, p. 132). The solid angle in Plato's description is geometrically known as trihedral, which for the polyhedra would be in multiples of 60 degrees (except for Earth's cube). However, these renditions do not explain Fire's unique cutting properties.
7. Plato, *Tim.* 55e.
8. The treatise is attested in Proclus, *In Tim.*, 2.278.27, 279.3; Simplicius, *In Cael.*, 640.24; Philoponus, *Contra Proclum*, passim.
9. F. Solmsen, *Aristotle's System of the Physical World* (New York, 1960); S. Sambursky, *The Physical World of Late Antiquity*, particularly ch. 2 on Plato's theory of matter and on Proclus. The Fifteen Arguments are examined also in Taylor, *Commentary on Tim.*, pp. 403–9. (No translation of Simplicius, *In Cael.*, has appeared yet in Sorabji, Ancient Commentators on Aristotle.)
10. Aristotle vs Plato: Simplicius, *In Cael.*, 640.27–32.
11. Simplicius, *In Cael.*, 638.11.
12. Proclus' reply to Objection 1. Simplicius, *In Cael.*, 643.13–27. Simplicius comments on p. 644 that the dissolution of triangles may be continued to the level of formless matter (*amorphôtou hylês*), thus allowing the transmutation of Earth too. However, it is not entirely clear from the passage that this is Proclus' opinion (cf. Sambursky, ibid., p. 52).
13. Reply to Objection 2. Simplicius, *In Cael.*, 645.15–28. Earth 'suffering the dividing action': cf. Plato, *Tim.* 56d1–6.
14. Flesh and gaps: Plato, *Tim.* 73b.
15. Reply to Objection 6: Simplicius, *In Cael.*, 656.6–14. There are two problems: firstly, there is the translation of the term *sphiggei*. Taylor, ibid., pp. 396–8, and Cornford, ibid., pp. 243–5, concur that it cannot possibly mean that the heavens 'compress' (*contra* Bury, Loeb translation), for a circular motion can hardly be conceived as producing a centripetal squeezing action. The better interpretation is that the heavens 'bind' by providing a bound, a limit, to the outward tendencies of the worldly Elements. Secondly, there is the question of interstitial void, *diakena*; Plato, *Tim.* 60e. As Taylor rightly observes, ibid., pp. 384–8 and 427, Plato does not deny the existence of transient interstitial 'gaps' between the solids. Besides, they seem to have facilitated interstitial motion and changes in volume.
16. Polyhedra capable of filling all space about a point: Proclus, *In Eucl.*, 15, 305 (Friedlein); see also Simplicius, *In Cael.*, 651–5. That the argument appears to have been accepted is betrayed by Simplicius' conclusion to Objection 6, p. 657. On micro-voids, see D. Sedley, 'Two conceptions

of vacuum', *Phronesis* 27 (1982), 175–93. Cf. E. Grant, *Much Ado about Nothing* (Cambridge, 1981), pp. 69–71 on *vacuum imbibitum*.

17. Proclus' reply to Objection 10: Simplicius, *In Cael.*, 664.1–13. The point is not that Proclus' line of argument is too accommodating but that it is systematic; again, not that Plato's theory is too flexible but that Aristotle does not consider it in full. Thus Aristotle's presentation of Platonic theory of the Elements is unfair and his analysis shallow.
18. Reply to Objection 15: Simplicius, ibid., 670–1. Aristotle ignores the angle factor and the mobility of Fire. As Proclus says, big tetrahedra only mean big particles of Fire, not cold.
19. Reply to Objection 11: Simplicius, *In Cael.*, 665.10–24. Aristotle sets about constructing his objections by subtracting the appropriate factor from the properties of the four Elements.
20. Reply to Objection 14: Simplicius, *In Cael.*, 668.20–669.3.
21. Proclus' reply to Objections 12 and 13: Simplicius, *In Cael.*, 666.9–30: 667.22–668.5.
22. Reply to Objection 9: Simplicius, *In Cael.*, 663.3–15. The objection rests entirely on Aristotle's *own* notion of absolute up-and-down motions. Cf. Taylor, ibid., p. 406. Plato's theory of motion of the Elements depends on the idea that they strive for their proper place in relation to each other. They tumble, as it were, around each other. Motion in a vortex and drifts by contact action: Plato, *Tim.* 57d–58c.
23. Reply to Objection 5: Simplicius, *In Cael.*, 650.5–15. Cf. Plato, *Tim.* 56e–57, and Proclus, Argument 3.
24. See Simplicius, *In Cael.*, 659.7–10; not clear whether it is part of Proclus' position.
25. Proclus' reply to Objection 7: in Simplicius, ibid., 658.30–2 to 659.1.
26. Wholes and parts ontology: Proclus, *El. Th.*, props 66–74.
27. Simplicius, *In Cael.*, 37.34–38.3, 51.21–26, which is given by the 'better' celestial bodies; Philoponus, *Contra Proclum*, 7: 278.19–28.
28. Mathematical vs physical triangles: see Simplicius, *In Cael.*, 646.21–4 and 653f. The main criticism was of how three-dimensional solids can be said to be constructed from non-three-dimensional figures, such as planes, lines and points. Aristotle, *Cael.*, 299a2–17; Sextus Empiricus, *Adversus Mathem.* 3, *Adv. Geom.* 72–82. One of Aristotle's arguments against the Platonic plane triangles was that they need not be joined edge-to-edge to form solids, but can be stacked on top of each other: *Cael.* 299b23–32, and Simplicius, *In Cael.*, 573ff. However, as Taylor pointed out, ibid., pp. 408–9, there existed the notion of a point as *minimal volume* (and planes with minimal thickness).
29. Distend the whiteness: similarity to Plato, *Tim.* 67e and the theory of colour vision is inappropriate; the dilation of the visual ray which is said to produce white is not comparable to the extension of planes by body. I think that it relates to *Rep.* IV 429, where the receptacle, *hypodochê*, is likened to the 'basic' white background which is sought in the process of dyeing cloth, before the dye itself is applied. Cf. A. E. Taylor, ibid., pp. 328 and 331, who comments that the coloured patch is equivalent to a physical thing composed of extension-receptacle, shape and form (colour).
30. Proclus' theory: see Simplicius, *In Cael.*, 648.6–10. Proclus says also that in *every* change there is something 'formless (*aneideon*) to a certain degree (*mechri tinos synchôrêteon*)'; cf. Plato, *Tim.* 56e–57 and 59a3–4. For references to the free triangles in suspension, cf. Aristotle, *Cael.* 306a22, and Simplicius, *In Cael.*, 647.9ff. See also Taylor, ibid., pp. 383, 388–9 on the disintegration into triangles as an intermediary state between fully-formed particles, and Sambursky, ibid., p. 53.
31. See J. Souilhé, *Etude sur le terme 'dunamis' dans les dialogues de Platon* (Paris, 1919); G. E. R. Lloyd, *Polarity and Analogy* (Cambridge, 1966) on the socio-political background, p. 210–30; F. M. Cornford, *Plato's Theory of Knowledge* (London, 1935), pp. 235–47, and *Plato's Cosmology*, pp. 197–205; H. L. Burstyn, 'The empirical basis of the four Elements', *Acts XII International Congress of the History of Science* 3A (1971), pp. 19–24. For mathematical vs non-mathematical interpretations of *dynamis* in Plato: P. Pritchard, 'The meaning of dynamis at Timaeus 31c', *Phronesis* 35.2 (1990), 182–93.
32. See M. Jammer, *Concepts of Force* (1957), pp. 26–46, 148f.; M. Hesse, *Forces and Fields* (1961), pp. 39–44, 67–79; cf. E. H. Madden, 'Parmenidean particulars and vanishing elements', *Studies in the History and Philosophy of Science* 3 (1972), 151–66.
33. Proclus, *In Tim.*, 2.25.1–8. See also Cornford, *Plato's Cosmology*, pp. 183–4, who remarks that Proclus distinguishes 'enmattered forms' from 'qualities' (*poiotêtes*).
34. See Dillon, *Middle Platonists*, pp. 406–7, who speculates that Cronius, a friend of the influential Numenius of Apamea, is a possible source. The theory is in Calcidius, *In Tim.*, chs 20–2, and cited by Nemesius, *De natura hominis*, 5.159–84 (ed. Einarson). Proclus does not mention any previous source.

35. Proclus, *In Tim.*, 2.39.16ff.
36. Plato, *Tim.* 31c on the 'bond' of the cosmos. Cf. R. J. Mortley, 'The bond of cosmos: a significant metaphor', *Hermes* 97 (1969), 372–3. In Proclus, *In Tim.*, the mathematical chain occupies a significant part of the book.
37. Ocellus Lucanus the Neo-Pythagorean, *De Universi Natura*, ed. R. Harder (Berlin, 1926). On pp. 37–8, Harder mentions Proclus' citation. Dillon, *Middle Platonists*, p. 156 n. 1, notes that according to Philo some thought that the *Universi Natura* was the 'Pythagorean' source of Aristotle's theory of Elements. The *Thesaurus Linguae Graecae Canon of Greek Authors and Works* (Oxford, 1977), #1545, wrongly attributes him to the fifth-century BC Pythagorean.
38. Proclus, *In Tim.*, 2.39.26–7.
39. Tenuity and grossness correspond to the size factor, sharpness and bluntness to the angle factor; and facility for motion is dependent on the type of face triangle.
40. Constraint governed by the geometry of the Fire and Earth polyhedra: the Air polyhedron, for example, cannot have acute angles, because only the tetrahedron has them; again, it cannot be difficult to move, because only the cube has this. The primary powers cannot be combined indiscriminately.
41. Qualities of Fire: Proclus, *In Tim.*, 2.40.4; *In Rep.*, 2.4.9; of Air, *In Tim.*, 2.43.25; of Earth, *In Tim.*, 2.43.23, 50.7.
42. Next group of qualities: of Fire, *In Tim.*, 1.106.33, 2.50.10, 2.44.21; of Air and Water, *In Tim.*, 2.44.14, 2.9.12, 3.113.32; of Earth, *In Tim.*, 2.44.19, 2.47.18.
43. Qualities of Air: *In Tim.*, 1.107.1; and Water, 1.107.4.
44. Fire's 'self-moving power': *In Tim.*, 3.114.4; another term is *oxykinêsia*, meaning literally 'moving sharpish-rapidly'. It was used to describe the motion of active entities, including the celestial bodies; also psychological.
45. For example, *In Tim.*, 2.43.24, 50.11, 18.11–12; cf. Plato, *Tim.* 58e. Smoothness of water: cf. the description of the Aegean Sea by Herodotus, *Historia* 3.117.
46. *In Rep.*, 2.234.17. Proclus on alchemy is discussed by Sambursky, *The Physical World in Late Antiquity*, pp. 59–60. Sambursky, however, implied that Neo-Platonists followed alchemical ideas: he put the cart before the horse.
47. See, for example, Frances Yates, *The Rosicrucian Enlightenment* (1972).
48. Real Ideas for the Four Elements: see Plato, *Tim.* 53–5; 55d–57c; 51–2; 51ab. 'All-perfect tetras': Proclus, *Plat. Theol.*, 3.64.22.
49. Proclus, *In Tim.*, 3.113.24–114.4.
50. *Plat. Theol.*, 4.88.6.
51. *Plat. Theol.*, 4.28–36.
52. 'Formal aggregates' in Intellect: *In Tim.*, 3.110.14–30.
53. Elements described as 'noetic': *In Tim.*, 2.48; 2.45.28–46.4.
54. Elements in the psychical mode: *In Tim.*, 2.46.4–11.
55. Tenuity of the vehicle: *In Rep.*, 2.187.18–30.
56. *In Rep.*, 2.242.
57. The Orphic Aether: *In Tim.*, 1.176.13; 3.208.30. As the Meadow of the Platonic Myth, and other landscape allegories: Plato, *Rep.* 614–15, and Proclus, *In Rep.*, 2.163.24.
58. On *hypekkauma*: Aristotle, *Meteorologica* 1.339b–346b.
59. 'Predominance' determining the overall movement of a compound body: Aristotle, *Cael.* 268b f. Features again in theories of motion and weights in the Latin West.
60. Cf. Plato's theory of materials and the four Elements: Plato, *Tim.* 59d4–e5, Fire mixed with Water. See also Taylor, *Commentary on Tim.*, p. 418.
61. Celestial bodies described as relatively immaterial: *In Tim.*, 2.46.18. Sublunary mode of the Elements:*In Tim.*, 2.46.20. Sorabji, *MSM*, pp. 114–16, explores the interpretation that Proclus' relative immateriality is absolute, and then encounters several difficulties regarding Proclus' view of prime matter. Although Proclus does not speak of prime matter directly, he *does not* reject matter as a 'universal receptacle', the Platonic near-equivalent to the Aristotelian 'prime matter' (see also section 6, Space, body and matter).
62. Differences in the same Kind-Element due to the size of corpuscles: Plato, *Tim.* 58c–e, especially referring to Fire.
63. That the pure forms of Fire do not burn, as opposed to the coarser which do: Plato, *Tim.* 58c; in the Middle Ages it gave rise to the doctrine of 'empyrean' sphere (cf. the Chaldaean 'empyrean' spheres). See also the Proclus fragment in Philoponus, *Contra Proclum*, Argument 1. 15–23, where the point is made specifically that the same kind of Fire exists both in the celestial and in the

sublunary realm, the difference being in the grade, or mode. The references to the 'vital' fire are probably from the notion of vital heat in Aristotle: see F. Solmsen, 'The vital heat, the inborn pneuma and the aether', *Journal of Hellenic Studies* 77 (1957), 119–23.

64. *In Tim.*, 2.11.13–17. See Festugière, *Comm. sur le Timée* 3, p. 34; also D. Hill, 'Incubus and succubus', *Man, Myth and Magic*, ed. R. Cavendish (1983), 5, pp. 1,432–4, impregnation by demon lovers and the birth of fairy children. For the lustful Etruscans, cf. D. H. Lawrence, *Etruscan Places* (1932).
65. *Rhoê*, bodies in a state of flux, was the concept characteristic of the philosophies emphasising the state of Becoming. Traditionally it was attributed to Heraclitus' school, but the famous 'Everything is in a state of flux' seems to occur first in Simplicius, *In Phys.*, 1312–13.
66. This is the notion of chaos prior to the imposition of form and order by the Creator; Plato, *Tim.* 52d–53a; 30a. On the state of agitation, see A. E. Taylor, ibid., pp. 351–5; F. M. Cornford, *Plato's Cosmology*, pp. 198–207; G. Vlastos, 'The disorderly motion in the *Timaeus*' (1939), enlarged to 'The creation in the *Timaeus*: is it a fiction?' (1964), reprinted in *Studies in Plato's Metaphysics*, ed. R. E. Allen.
67. Cf. J. C. Groot, 'Philoponus on *de Anima* 2.5, *Physics* 3.3, and the propagation of light', *Phronesis* 28.2 (1983), 177–96, and *Aristotle and Philoponus on Light* (New York, 1991).
68. Three kinds of light: daylight, a pure fire not mixed with other elements; the visual current, like daylight; flame, the light of material objects; see Plato, *Tim.* 45f., 58c, 67d; see also Taylor, ibid., pp. 277–83, 410–11.
69. *In Tim.*, 2.8.22–5. See also Proclus fr. on light in Philoponus' *Contra Proclum* (Argument 1), 18–19, 22–3.
70. Proclus, *In Tim.*, 3.114.31; Simplicius, *In Cael.*, 15ff. Simplicius cites Ptolemy and Plotinus on p. 20. Studies on the criticism of Aristotle's aether and his theory of motion: Sambursky, op. cit., pp. 122–32 (on Xenarchus); J. Longrigg, 'Elementary physics in the Lyceum and Stoa', *Isis* 66 (1975), especially pp. 213–29; C. Wildberg, *John Philoponus' Criticism of Aristotle's Theory of Aether* (1988); L. S. B. MacCoull and L. Siorvanes, 'PSI XIV 1400: a papyrus fragment of John Philoponus', *Ancient Philosophy* 12 (1992), 153–70.
71. Proclus, *El. Phys.*, bk 2, definitions 6 and 8; bk 1, prop. 14.
72. See Ritzenfeld's introduction to the Teubner text (1911). On the metaphysical aim of the work, D. J. O'Meara, *Pythagoras Revived*, pp. 178–9. Proclus' *El. Phys.*, under the title *De Motu*, was one of the first treatises on Greek science to enter the Latin West.
73. For Proclus' position, see especially pp. 380–1. He uses it to support the eternity of the world. Philoponus argues against it; he states that Proclus' theorem of the motion of the Elements disagrees with Plato: Philoponus, *Contra Proclum*, 10: 380–403; and cf. pp. 240.28–241.10; 278–9.
74. 'Space as the true place': *In Tim.*, 1.161.1–3. An important, but usually overlooked, source for Proclus' concept of space is Proclus, *In Rep.*, 2.198. There he gives a detailed analysis of space-place, including the view that cosmic place is a body, 'indivisible', 'continuous', and 'most-immaterial' and 'most-divine'. The significance of the passage becomes even greater, for in 2.196 he links it to the concept of the soul-vehicle and states that Porphyry 'had suspected as much'. Two studies on Proclus' space in *In Rep.* are by Schrenk: 'Proclus on space as light' (1989); 'Proclus on corporeal space' (1994). Sorabji, *MSM*, ch. 7, addresses Proclus' space as part of a post-Aristotelian concern with interpenetrability. Others: Sambursky, *The Concept of Place in Late Neoplatonism*; 'Place and space in late Neoplatonism', *Studies in History and Philosophy of Science* 8 (1977), 173–87. General studies on space include P. Duhem, *Le Système du Monde* (1954). vol. 1, p. 333ff.; M. Jammer, *Concepts of Space* (1957), p. 12ff. Cf. E. Grant, 'Cosmology', in *Science in the Middle Ages*, ed. D. C. Linberg (Chicago, 1978), pp. 270, 272–80.
75. Aristotle, *Metaph.* 1016b26, 1066b32; Sextus Empiricus, *On Pyrrhon*, 2.30.5, *Against the Mathematicians*, 7.101.4.
76. Aristotle, *Phys.* 4.1, 209a5–7; 4.8, 216a26–b11; 211b14–29; Philoponus, *In Phys.* 557.8–28; 562.29–563.26. On the concept of total interpenetration of bodies and the blending of qualities, see Sorabji, *MSM*; R. B. Todd, 'Monism and immanence: the foundations of Stoic physics', in *The Stoics*, ed. J. M. Rist, pp. 137–60; R. B. Todd, *Alexander of Aphrodisias on Stoic Physics*, especially pp. 28–49, argues that the total blending was only applicable to the relationship between *pneuma* and matter, not to the interaction between encosmic bodies: this is not dissimilar to Proclus' 'immersion' of the world into light and space.
77. Proclus quoted by Simplicius, *In Phys.*, 612.25–7. Space is still an encosmic three-dimensional body. On three-dimensionality, space and body, see Proclus, *In Tim.*, 2.77, 2.113.12–32, 3.329.30–2. Cf. Plato, *Tim.* 53c. See also A. E. Taylor, op. cit., pp. 346–7, 362. According to M.

Jammer, op. cit., pp. 22–36, the Platonic 'matter' developed either as a kind of body without qualities, as in the Stoics, or as the mere sense of corporeality, as in the Neoplatonists. Cf. three-dimensionality and corporeality in Sextus Empiricus, *Adv. Grammaticos* 1.19–28; *Adv. Geometras* 3.19–22, 77–91.

78. Syrianus, *In Metaph.*, 85.15–27.
79. Philoponus, *In Phys.*, 558.13; 582.28–583.13.

5

◆

THE CHALLENGE OF REALITY: STARS AND PLANETS

Astronomy was an integral part of Platonism from the time of Plato and the Academy. Platonists saw the celestial bodies as the best representatives of the rationality and permanency of the purely intelligible domain, the Forms. If Aristotle encouraged the natural sciences as part of his philosophy, Plato encouraged mathematics and astronomy. Influential astronomers, such as Eudoxus, rose from the Platonic ranks. Proclus, likewise, actively promoted both observational and mathematical astronomy, and several of his circle continued this essential Platonic interest: Marinus (successor to Proclus at Athens), Ammonius (later Head of the Alexandrian School) and Heliodorus. Proclus wrote the first, and last, major critical assessment of Ptolemy, the great second century AD Alexandrian astronomer. In his book, Proclus also records how to construct and use the spherical astrolabe. He personally made astronomical observations, the last in AD 475. With this observation and those of his students, we see the end of European astronomy for a long time.

The study of the stars led Greek thinkers to a problem that concerns philosophers to this day: the challenge of reality. If we kick a stone (as Dr Johnson did to refute idealism), do we encounter hard reality, or is it all still in our mind? Objective reality is supposed to go about its business without being bothered whether we, as thinkers and observers, believe in it or not. Reality, being by definition independent, thus occupies a privileged place in our knowledge and values, and even some arguments of scepticism seem to presuppose an objective vantage-point. On the other hand, all that we know depends on our perceptions, conceptions and language. We cannot be sure of anything for which we have no evidence, nor can we assimilate anything that we cannot comprehend and describe. By the anti-realist argument, it does not matter if there is a 'real' world or not. What does matter is that for which we have evidence and an account. To do otherwise, we stick our heads out through the veil of appearance, and risk having them cut off.

Scientific knowledge claims to have as its object something independent of the observer. However, empirical evidence is not by itself sufficient in revealing the workings of Nature. There must exist a theory, a piece of subjective speculation, to accompany and integrate such data and make them intelligible as facts. Thus, observations are 'theory-laden'.[1] Scientific knowledge stems from physical data linked together and interpreted by an authoritative theoretical explanation. This is where the problems of science begin, for the same raw findings do not necessarily decide in favour of one theory as opposed to another. Often we can make them to fit either. Often new empirical data can only fit in extra-speculative theories beyond the bounds of current rationality.

To assert the existence of things independent of their observers is to believe in truth transcendent of evidence and justification. In this respect, the realist is almost like a mystic, who also has faith in things beyond evidence. The sceptic can criticise both by pointing to many examples where what we profess to be real differs from subject to subject. This, and the dualism of 'reality' and 'appearance', which often accompanies realism, leads many to anti-realist positions. However, the latter are not always more credible than the realist, and tend to be less satisfying. Indeed, the general high confidence in science is based on the belief that there *is* an independent world 'out-there', which can be, and has been, discovered. Contact with it opens our subjective horizons and increases our body of knowledge, which would otherwise stagnate. Discoveries are fascinating to study, for they involve people who stuck their necks out. A new reality is like a New World, whose unknown shores we reach by crossing the gulf between subject and object, navigating to it with the triangulation of evidence. But once we touch shore, how much do we take it for what it is, and how much do we appropriate it: rendering it our 'Vinland', 'West Indies' or 'America'?

Later Neo-Platonists proposed that we have a double object of perception. The one is the real object. But our thought and perception of it is our immediate object. We apprehend what is appropriate to our particular level of being and knowledge: sense-perceptions with sense-organs, images with imagination, concepts with discursive thinking, and real beings with intuitive intellect. *Psychê* can combine images from sensory, internal and intellective sources. This makes it possible for the higher faculties to 'correct' the lower, and lead to understanding. So, for Proclus, positive truth must be logically demonstrable, and correspond to metaphysical reality.

To summarise the challenge of the stars and planets, the Greeks (of all camps) studied the celestial bodies and concluded that they are imperishable, regular and determinate in motion, in mutual entailment. Thus the heavens sharply contrast with the state of affairs 'down-here'. Once philosophers, astronomers and mathematicians (sometimes the same people) agreed on the nature of the heavens, there was nothing to suggest that reality could be otherwise. Evidence and theory coincided.

The problems with the celestial bodies arose with more detailed observations and classification. Scholars became increasingly aware that some celestial objects do not behave as regularly as others, even in their group, or that they exhibit additional movement. How could one 'save the phenomena'? Mathematical astronomers aimed to find the best models to fit the new observations. However, in constructing their models they illustrated how unsatisfactory pure instrumentalism is. They employed combinations of circles. But the sphere, or circle, was itself validated precisely because it had a metaphysical value. The sphere is an icon of the real cosmos, being symmetrical all round, 'perfect' like the ontological nature of the celestial objects. This is why philosophers continued to worry. If the celestial bodies behave oddly, there must be something odd about them. Put more strongly, if they behave in a complicated and irregular manner, they cease to be what they are. This leads to contradiction, which makes reality, the foundation of knowledge, deeply unintelligible.

1. METAPHYSICS AND ASTRONOMY

Stars, gods and knowledge

From the mists of time emerge the astronomer-astrologers of the Babylonians and the astronomer-priests of the Egyptians. Observing the stars was not a purely scientific pursuit undertaken for the sake of knowledge. The great civilisations of the fertile crescent of 4,000–5,000 years ago depended for their existence and social cohesion on the sovereign. Religion was not just a matter of personal belief, but a way of anticipating the future and safeguarding against misfortune. This was especially true of the first civilisations, because they were always just one step ahead of extinction. The first scientists were essentially priests of the gods of Nature. Their job was to predict the cycles, the pattern of future events. On their conclusions depended the fate of the king and the state. Some things never change, for the UK Meteorological Office, which is responsible for weather forecasting, is part of the Ministry of Defence.

The Greeks seem to have absorbed many of these beliefs. From the time of Pythagoras (sixth century BC) to Plotinus and on, they looked to the East as the source of knowledge about the heavenly eternals. This does not mean that the Greeks were pupils at the feet of oriental sages. The down-to-earth reason is that the Babylonians and Egyptians accumulated a much more long-established reputation as specialists in the mysteries of the universe, that is, astronomy coupled to religion. The 'Magi', the 'Chaldaeans', the Egyptians and in general the so-called 'ancients' or 'elders' were attributed a God-given authority over the 'juniors'. Nevertheless, the Greeks' view of the starry gods took a different route. Amid the individualism characteristic of the Greek city-states, astronomy and its applied arm of prediction, astrology, could no longer be limited to one or few individuals, however mighty. Astrology became gradually available to the many. This is what led to the creation of the 'personal' horoscopes, with which we are still familiar.

The Greeks seemed to have worshipped the starry gods in a loose sense as immortals. We have no evidence that there were any cults specific to them, as there were among the Babylonians. Plato's *Timaeus* gives us the first clear evidence of belief in the divinity of the planets. For example, there is a reference to the 'divine star of Hermes' (planet Mercury) (*Tim.* 38d). The starry gods feature more strongly in the dialogue, the *Epinomis*. The philosophers, however, believed in their divinity as expressing the orderly life attainable by reason. Stars orbit in an immutable, regular fashion. By applying reason and mathematics, we can plot their motion. Thus the study of the stars is the rightful object of philosophical contemplation, which leads on to metaphysics (Plato, *Rep.* 529a9). 'Over-there' (*ekei*) is the intelligible, unchanging order, whereas 'down-here' (*entautha*) is the material, transient world.[2] The starry gods exemplify the rationality of the entire cosmos, which guarantees precise knowledge, science (*epistêmê*).

Moreover, the earliest philosophical notions of 'divinity' related to the nature of the 'ultimate principle' (*archê*). Anaxagoras, for example, called the motive and purposeful principle of his cosmology 'divine' for this very reason. He seems to have denied divinity to the heavenly bodies, probably because, like many thinkers of his time, he rejected the personification of divinity. The impersonal 'divinity' (*theion*) has a longer history than the personal, god (*theos*). According to later biographers, Anaxagoras was put on trial on a charge of impiety. He regarded the celestial objects merely as bodies, like stones. This links to the first theory that the eclipse of the sun by the moon is the obscuration of a luminous by an opaque body. As we shall see, this is precisely Proclus' argument for placing the Earth Element in the heavens.

Plato's dialogues, the *Republic*, *Timaeus* and *Laws*, show the philosophical view of the divine cosmic bodies but also the advances in astronomical knowledge of the period. The lights in the sky are no longer the moon, the sun and the stars (in general), but the moon, the sun and the 'wandering' and 'fixed' stars. The Greek word planet (*planêtês*) means 'wanderer'. The 'fixed stars' are the stars of the zodiac and the other constellations. The planets are the 'wanderers' because from the earth we see them move forwards, sideways and backwards against the 'fixed' stars. Early astronomers distinguished five such wandering stars with the naked eye. According to Plato, after the two great luminaries, the moon and the sun, are the stars sacred to Aphrodite (planet Venus), Hermes (Mercury), Ares (Mars), Zeus (Jupiter) and Kronos (Saturn). Beyond them lie the fixed stars in their constellations. Remarkably enough, the Greeks were eventually able to place the planets in order of distance from earth (by formulating the earliest scientific laws on angular size and speed relative to distance). Later astronomers pointed out the irregularities of lunar motion and explained the unevenness of the length of seasons as an irregularity in the sun's orbit. The moon and the sun thus joined the five planets to become seven.

By the fifth century AD, the divine status of the celestial bodies remained, but the irregularities of the planets multiplied. As Proclus sees it, the main problem is not how to describe celestial motion mathematically but how to explain it as something really existent.

> Are the circles only projections of the mind or do they have a substance? For if they are only projections of the mind, the [astronomers] have mistakenly moved away from physical bodies to mathematical conceptions, and attribute the causes of physical movement to things that do not exist in Nature . . . But if they exist in substantiation, the [astronomers] destroy the continuity with their spheres . . . they allow them sometimes to gather in one plane, at others to separate and to cut through each other . . . What are the causes of these levellings and separations, I mean the true causes (*alêthôs ge aitia*), which when the soul knows it at once will cease being in the agony of thought (*katidousa*)? These they never tell us. But proceeding backwards, they do not draw conclusions from their hypotheses, just as in the other sciences . . . Nevertheless, one must see that of all the hypotheses, these are the most simple and fitting to the divine bodies, and that they were conceived to discover the mode of the movements of the stars, which truly move in this way, just as they appear to us, in order to make apprehensible the measure in them. (Proclus, *Hyp. Astr.*, 236.17–238.27 (Manitius))

His premises regarding the celestial bodies are precisely the same as those of his illustrious predecessors, including Ptolemy, the astronomer. However, with the benefit of his Neo-Platonic multi-modal metaphysics, he draws some subtler distinctions. The heavenly objects may be divine, but they stand between the intelligibles and the sensibles. Like the intelligibles they are everlasting, but like the sensibles they are perceptible. Their movement is essentially orderly, but, due to their proximity to the disorderly domain, the planets exhibit a certain periodic irregularity.

> For as we begin the comprehension of the celestial bodies with our instruments down-here, likewise they remind us [see Plato's theory of knowledge] of the invisible circulations over-there; for the heaven lies between (*mesos*) the generated entities (*genêtôn*) and the intelligible (*noêtôn*). (Proclus, *In Tim.*, 3.150.23–8)

Proclus draws many intended links between the celestial and the mathematical objects. The latter also lie in an intermediate order between the intelligibles and the sensibles. Besides, the celestial orbits are objects of the higher mathematics of astronomy.

> Considering that everything exists in an appropriate fashion, let us look at those which are intelligible, physical and in between, which are usually called mathematical. In the intelligible pre-exist both the intermediary and the last as principles (*archêgikôs*); in the mathematical exist both the first as images (*eikonikôs*) and the third as exemplar paradigms; and in the physical exist the appearances (*indalmata*) of the foregoing. (Proclus, *In Tim.*, 1.8.15–20)

Consequently, we may say that the celestial bodies manifest first and best the mathematical proportions in the physical world. Yet, insofar as they are mobile physical bodies, there is a degree of uncertainty about them. The measures which define them can only be relatively precise.

> In the mathematical objects, proportion (*analogia*) possesses an exact and scientifically knowable quality (*to akribes kai to epistêmonikon*). But in the physical objects it is no longer the same case; such proportion as exists in the celestial bodies partakes of a certain exactness (*tinos akribeias*) . . . The heavenly objects are in a certain respect closer to the exact proportions (*syggenestera pôs esti tois akribesi logois*). (Proclus, *In Tim.*, 2.51.6–15)

Being physical, the celestial bodies change only by locomotion, according to Aristotle's theory of motion as change. In the case of the planets in particular, it extends to all six directions of longitude, latitude and 'depth', meaning distance from earth. So, for Proclus they are the philosophical causes of change within the corporeal world, besides being the causes of change of the seasons, weathers and climates: the Aristotelian physical astrology of Ptolemy.[3]

> It is requisite that the cause of complexity (*poikilas aitian*) and the principles of contrariety (*enantiôseôs archas*) are anticipated (*proeilêphthai*) in the heavens; or how could the heaven comprehend the realm of generation and how could it guide the transformation of the sublunary Elements, if it did not contain in itself the principle of contrariety? (Proclus, *In Tim.*, 3.122.6–10)
>
> For every natural body is moved by itself and not by accident, inasmuch as nature is a principle of movement and change [*metabolê*; the Aristotelian definition]. But the stellar body (*astrôon sôma*) is not moved according to all other change-movements, since it is perpetual (*aidion*) through all time, thus it is only possible to accept the movement in place, local motion (*kata topon*), and in particular the circular one. (Proclus, *In Tim.*, 3.119.23–30)
>
> The forward movement (*eis to prosôi*) is added to the stars as a visible evidence that this is the principle (*archê*) of rectilinear motion (*euthyporias*), while the complexity of the planets guides all the indefiniteness (*aoristian*) of generation, inasmuch as the former moves the latter from a proximate position (*prosechôs*) with its many counter-revolutions (*anelixesi*). (Proclus, *In Tim.*, 3.124.14–18)
>
> And precisely because the planets are the natural intermediaries between the fixed stars and the sublunaries, they are moved in longitude (*mêkos*), latitude (*platos*) and depth (*bathos*) both in an irregular and a regular fashion, in order (*hina*) that they may possess (*echôsi*) the paradigms of those posterior to them which move in all six directions (*pantoiôs*), and in order that they may imitate with their circular movement the uniform (*monoeides*) motion of those prior to them. (Proclus, *In Tim.*, 3.79.15–19)

Satellites?

The planets and the fixed stars are not the only objects in space. According to Proclus, the planets have satellites, companions normally invisible to the naked eye because the brilliance of the celestial body to which they are attached overshadows them. This is the essence of one of Proclus' most remarkable conclusions. It seems to mean that he had anticipated, long before Galileo's pioneering observation of Jupiter's moons, the existence of satellites.[4]

> There are some other celestial divine living-beings which accompany the planetary circulations, whose leaders (*hêgemones*) are the seven planets . . . they also 'turn' and 'have such kind of wandering' [see *Tim.* 38e] . . . for their order revolves (*symperipolei*) and returns periodically together with their principles (*archais*). (Proclus, *In Tim.*, 3.129.9–14)

> Each of the planetary spheres is a whole universe which embraces collectively many divine classes invisible to us (*hêmin aphanôn*), but each visible star is the leading principle of all of them. (Proclus, *In Tim.*, 3.131.1–3)

In trying to unravel the full story behind the satellites, we encounter them associated with non-physical entities, the Guardian class. They are also found at the levels of Intellect and Soul, where they have a conserving and separating function. So, the 'satellites' as the 'multitude' accompanying a 'leader' – in this case a planet – rest on the metaphysics of one and many. The celestial objects, by virtue of their self-substantiation, are the 'leading principles' of a manifold. The subsidiary manifold composes the 'attendant bodyguard' of the leading entity.[5] The one coexists with the many. In Greek, 'attendant bodyguard' is *doryphoros.* We can readily translate it as 'satellite'. In fact, modern Greeks use the same term to refer to the earth's moon, the 'moons' of other planets, and to artificial ones.

Entities predicated of a self-substantiated unity are 'divine'. Divinities, according to the general metaphysics, have a multitude of intermediaries. These preserve the purity of the divine character and definition by mediating with less perfect levels. So each planet, as an individual self-substantiated entity, has a multitude associated with it. These intermediate orders are normally called *daimones*, the guardian powers assigned to specific aspects of the divinity (later, when the hierarchy was Christianised, the *daimones* became angels and heavenly powers). So the Neo-Platonic spirits constitute the 'chorus' of satellites, which revolve around each planet.

> For the wandering stars, the planets, are cosmic governors [*kosmokratores*: an astrological term] and are allotted a total power and, as the fixed sphere has a number of starry living-beings (*zôôn astrôôn*), so each of the planets is a leader of its appropriate group of entities . . . Hence the problem may be solved of how the one and single sphere of the fixed stars encompasses a multitude of stars but the many spheres of the planets lead around (*periagei*) one star each. (Proclus, *In Tim.*, 3.58.8–13)

That the satellites revolve 'around' their planet does not necessarily mean circulation in space around a single centre. In a loose sense it can mean 'happening to be about this or that body', as well as simply 'hanging around'. Nevertheless, the expression embraces enough semantic ambiguities to surprise even the hardened sceptic. A good example is Proclus' account of Ptolemy's order of the planets, where the sun's orbit is between the orbits of Mercury and Venus:

> Ptolemy . . . places the sun in the middle of the seven planets . . . and those which are after it, Venus and Mercury, move together with it, escort it (*propompeuontes*) or are its satellites (*doryphorountes*).[6] (Proclus, *In Tim.*, 3.62.17–21)

So the satellites are primarily non-physical rather than physical entities, and relate to the non-physical aspect of the celestial objects. Yet, insofar as the *daimones* are not wholly non-physical but have semi-material bodies, and Proclus perceives occasions when the escorting of the satellites could have a physical parallel, we cannot say that his theory referred to an entirely incorporeal state of affairs. For instance, in the following passage, the clues that the 'disappearances and appearances' do not refer to a visible phenomenon are not as clear as they ought to be.

> The celestial gods and their companion classes (*synepomenôn autois genôn*), which are sometimes hidden by the bright rays (*kalyptetai hypo tas augas*) of the leading gods, when they reappear produce terrors and the signs of future events. (Proclus, *In Tim.*, 3.151.32–152.2)

The satellites are said to be eclipsed by the brilliance of their leading star. Such invisibility has its parallel in the theory of Elements. The visible and tangible Elements, Fire and Earth, obscure the other two, Air and Water, which are invisible and transparent to our sight. Similarly, we can neither see the satellites as clearly as the principal celestial bodies nor touch them as firmly as the terrestrial. Further, the *daimones* are said to be composed of some kind of aethereal or airy matter.

> That in each of the planetary spheres there is a multitude of entities coordinate with it you may establish from the two extremes; for the fixed sphere has its own coordinate multitude and the earth is itself the totality of the terrestrial living beings . . . But the ones between escape the attention (*lanthanei*) of our senses whereas the ones at the extremes are made manifest to us, the celestial through their exceedingly brilliant substance [viz. light] and the terrestrial

> through their kinship (*syggeneian*) to us. (Proclus, *In Tim.*, 3.131.10–18)

The existence of satellites in the heavens, circulating around the planets, stands as one of the mysteries of metaphysical speculation. Without empirical evidence, metaphysics can strike ahead and hit on an accurate description of reality, by following a series of arguments that cohere with its *a priori* assumptions. The unsettling thing is that the case of the satellites is not the only one. As we shall see shortly, Proclus gives to the planets a spin-rotation on their own axis, in addition to their orbital revolution. This is in addition to postulating the same for the fixed stars, as Plato had done 800 years earlier, which historians of science have described as 'amazing' and 'curious'.[7]

2. ACTION AND BODY

According to Proclus' ontology, every entity is a bundle of levels and properties. So are the celestial bodies. 'Body' is just one level among many. The term 'celestial body' is therefore too restrictive, for it highlights only the physical aspect. A more neutral term is 'celestial' (*ouranios*), which can be used as a substantive in Greek, or at least 'celestial object'.

Each celestial has by virtue of its very existence a *henad*, unity, and a real-existent being. It possesses its own means of motion, which a form determines. Finally it has a body, the celestial body, the part of the whole celestial object that is visible and, according to Proclus, also tangible.[8]

Most Greek philosophers thought that the natural world has more permanent principles. The best paradigm is that of a thinking living being, who rises above blind fate and is free to pursue the order of rational life. Reason must govern the world as a whole. Even Aristotle accepted that the celestial bodies have an 'unmoved mover', an intelligence (*nous*). For Platonists, however, soul supplies the self-motion and organisation that sustain a body.[9] Although the intellection (*noêsis*) of a living being may initiate the movement, it is the soul that executes it. The body in itself is completely inert.[10] Only external forces can displace it: it is 'moved by others' (*heterokinêton*). Soul is the 'automobile' (*autokinêton*). So, while the soul *moves*, the body *is moved*.

We can therefore divide notionally Proclus' composite celestial object into two: an incorporeal and a corporeal part.[11] The incorporeal includes the self-substantiated unity, the intellect and the soul of the celestial. The corporeal is, of course, the body of the celestial with its immanent nature. If the corporeal and visible part constitutes the physical aspect of the celestial, then the incorporeal constitutes the metaphysical, which is responsible for its action. So the celestial shows at least two faces, each turned to the levels appropriate to it. While the body exhibits the visible, corporeal properties, the incorporeal exhibits the invisible and incorporeal. By the general metaphysical analysis that like apprehends like, this is how the celestial bodies come to relate with non-physical entities, while being physical.

Take, for example, two people sexually attracted to each other. They turn to each other with their thoughts and emotions. When they are physically close, they feel each other with their touching bodies. The same two people relate in different modes. This illustration is not gratuitous but relevant to the celestial bodies. William Gilbert, the discoverer of magnetism in the sixteenth century, visualised the attraction of opposite magnetic poles and the attraction of the earth to the moon and the pole star in such sexual terms. He called it 'magnetic coition'.[12] Magnetism was seen as an immaterial influence, because magnetic bodies do not exchange bits of matter with each other. A flame or a sheet between two magnetically-attracted bodies tests this experimentally. Subsequently, Kepler made magnetism the universal force of attraction in the solar system (before Newton proposed gravity).

The celestial agent

In Proclus' ontology, the incorporeal is the source of movement of the corporeal. The incorporeal is the internal active agent, which determines the external, phenomenal behaviour of the body. 'As the visible Socrates [*phainomenos*; viz. his body] is one thing but the true Socrates (*alêthinos*) is another, so much more different is the true Sun and Jupiter from that which consists of body' (Proclus, *In Tim.*, 3.72.19–21).

The celestial divine unity, or *henad*, is the ultimate source of the star's power. For Greek philosophers, divinity did not carry heavy religious overtones. It signified a better, more orderly, rational life free from the ignorance and mutability of mundane affairs. Besides, for the citizens of imperial Rome, divinity was also the attribute proper to the high and mighty: the emperor. We may compare the custom of calling God 'lord' and 'king'. For Proclus, divinity signifies the state of perpetual coherence and the ability to exist by oneself, independently of externals. It is the property of being both one and self-constituted or self-substantiated (*authypostatos*). Such are the celestial objects.

By virtue of its self-substantiated *henad*, the celestial has both the sufficient 'volition' (*boulêsis*) and 'power' (*dynamis*) to act. Some of this action is channelled through non-physical levels. This is how the celestial objects are said to influence people and exercise providence over them as gods.[13] According to Proclus' metaphysics, self-substantiated entities initiate their own 'procession' and 'reversion' to themselves.[14] This cycle eventually surfaces as locomotion, motion in physical place and time. This is how celestial objects circulate in orbits. Proclus calls their power 'sovereign' (*archikê*) and 'controlling' (*kratikê*).[15] We shall meet the latter again in his discussion of the celestial orbits. Concepts such as these lie behind Proclus' cursory remark about the 'motive deity' (*kinêtikê theotês*) which is in each star.[16]

Next comes the celestial 'intellect', *nous*, and its operation, *noêsis*. Following Plato (*Tim.* 40b etc.), Proclus has each celestial 'think the same thoughts about the same objects of thought and always in the same manner'. This is the formal origin of their circular motion. According to Proclus, the stars revolve around the centre of the universe as a group *and* around their own centres as individuals. Most remarkably, he goes further and proposes for the first time in the history of astronomy that both the fixed stars and the planets have their own, proper self-rotation. However, the physical circulation of the celestial objects is the proximate result of their own, self-moved souls. Soul's action takes place in space and time.

Through this non-physical agent, whose actions can be delineated by mathematics, the stars move the way they do physically. It is part of Proclus' general metaphysics. That which originates purely as an internal dynamic process within point-dimension, or beyond any dimension (unity), can unfold layer by layer through the graded accumulation of increasingly less unified, less abstract modes, each with their own specific properties, into a motion in three-dimensional space and time.

Celestial physics

The celestial body must be of a nature fit for its agent. The doctrine of Greek astrophysics, as Proclus repeats it, was that 'the nature of the celestial bodies is immaterial and unchangeable (*aylos kai ametablêtos*)'.[17] To fulfil these criteria of immutability and impassivity, Aristotle had introduced a fifth Element, the Aether. Proclus rejects it as totally unnecessary and extraneous. He is not the first to do so. Criticism had welled up from earlier Aristotelians, such as Xenarchus (first century BC to AD).

Proclus attacks the *ad hoc* nature of the fifth Element for not relating to anything else in the world. The laws of physics must be universal, not different in separate parts. 'Simply to say that heaven is a fifth body does not make clear anything about it except that it is different from the sublunary Elements' (*plên hoti tônde tôn stoicheiôn heteron*) (Proclus, *In Tim.*, 3.115.6–8). He proposes that we can account for the imperishable nature of the heavens just as well, if not better, by having a Fire and other Elements made of an incorruptible substance capable of moving naturally in a circular, unopposed fashion. He also carefully avoids the possible extremist Platonic and Stoic position that the celestial bodies are made exclusively of Fire.[18]

All the four Elements exist at all levels of being. There are four Elements in heaven as there are on earth. The only difference is in their mode of existence. While on earth the Element of Earth predominates, in heaven that of Fire predominates.[19] Proclus examines each option open to him in a dialectical exercise. He arrives at the conclusion that the heavens must possess all the properties afforded by Fire with Air, Water and Earth:

> They who say that the nature of the heavens is different from those entities subject to change, which are truly enmattered realities (*ontôs enylôn pragmatôn*), speak correctly but they overlook our words and those of Plato on this subject . . . that the Creator 'bound and constituted together the heavens' with the proportion of the four Elements [*Tim.* 32b], and elsewhere that they are 'constructed from the form of Fire' . . . for by necessity: the celestial element is either (option A) totally different from the four Elements, i.e. it is a fifth Element (*pempton stoicheion*), as some say; or (option B), that the heaven consists of the four Elements also; or (option C), from one out of the four; or (option D), from more than one out of the four.
>
> If the heaven consists of the four, then (reply to option B, sub-option 1) it consists in form (*kat'eidos*) of the same sublunary Elements, or (reply to B, sub-option 2) of different ones. Moreover (reply to option A) if the celestial element is different from the four, how is it that the whole world consists of the four Elements, as Plato says [*Tim.* 32bc]? While (reply to option C) if it consists of one Element out of the four, how is it that the stars are made in the most part from Fire (*ek pleistôn pyros*), as he says shortly afterwards [*Tim.* 40a]? And if (reply to option D) from more than one Element but still less than all four, how could the divine body be not imperfect if it does not have all the Elements, when earth possesses completely all the sublunary ones? And if (returning to B, sub-option 1) heaven consists of all of them, how is it that their combination over-there is indissoluble (*alytos*), whereas down-here it is dissoluble? For the celestial objects are not indissoluble simply because they are all in equal proportion and equilibrium [*isokrateian*; viz. that there is no

> predominance]; for how could the variety in the heavens be derived from equivalence (*isokrateias*)? . . . But if (returning to B, sub-option 2) it is composed from different elements, how is it that the heaven is moved with a simple motion if its constituents are compounds [cf. Aristotle, *Cael.* 306b20]? . . .
>
> Such, therefore, being the queries, it is better to state that the heaven is made with Fire predominating (*ek pyros epikratountos*) which comprehends in a causal mode (*kat' aitian*) the powers of the other Elements, such as the solidity and stability of Earth, the adhesive and unifying property of Water and the tenuity and transparency of Air. For as the earth embraces everything in a terrestrial fashion (*chthoniôs*), so heaven embraces everything in a fiery fashion (*pyriôs*); so that one Element predominates (*epikratoun*) and the others are included in it in a causal mode. It is necessary therefore to acknowledge that the Fire over-there is not identically the same with the sublunary, but that it is Fire divine, co-substantiated [*synyphistamenon*; by the Q text][20] with life, and is a like image of the intellective Fire, whereas the Fire down-here (*entautha*) is indeed enmattered, generated and corruptible. (Proclus, *In Tim.*, 2.42.22–43.31)

As we have seen already in his theory of space, Proclus regards materiality as the root cause of mutual division when bodies interact with each other, and as the main factor responsible for disorderly movement. Such materiality is only relative to mass-matter. It does not refer to matter as the universal substrate-power. 'The heaven is immaterial – by this I mean, with respect to that matter which is unstable (*anedraston*), possesses a bastard (*nothon*) beauty and is deformity itself (*aischos ousan autên*)' (Proclus, *In Tim.*, 3.122.18–20). Thus an 'immaterial' body is unchangeable because it is not affected (*apathes*) by anything corporeal that seeks to change it.[21] Nevertheless, he could lay claim to invariability for the celestial bodies in their own right. According to his ontology, 'all that arises from an unmoved cause has an unchanging existence (*ametablêton hyparxin*); but all that arises from a moving cause, a variable' (*El. Th.*, prop. 76). Since the heavenly bodies are fashioned directly by imparticipable causes, the Creative Intellect through Nature, and since such causes are exempt from change, the celestial bodies are themselves unchanging.

The matter of the celestial body consists of all the four Elements with Fire predominating. But the celestial Fire is unlike the earthy. It is of a different *state*. Celestial Fire is primarily light. Further, the celestial Fire is indeed incorruptible, for heaven is Fire's own natural place where it can move perpetually in a circle:

> The Fire which is enmattered is different from the immaterial (*allo pyr enulon . . . allo aylon*) – immaterial in relation to the sublunary matter – and the corruptible is different from the incorruptible (*allo phtharton . . . allo aphtharton*). (Proclus, *In Tim.*, 2.9.11–14)
>
> Fire predominates (*epikratei*) everywhere and heaven is characterised by its power, and the Fire over-there is neither caustic, . . . nor destructive (*phthartikon*) of anything, . . . but it shines forth with life-producing heat, illuminating power and with purity and translucency; for the violent quality (*sphodron*) is different from the pure (*katharon*), as Socrates showed in the *Philebus* (52c1). So the Fire that is there is light. (Proclus, *In Tim.*, 3.128.30–129.1)

Proclus' important contribution is the theory that all four Elements are in the heavens as well as on earth, and that they exist over-there as 'summits' (*akrotêtes*), energetic states. This theory would later be copied by Simplicius and John Philoponus.[22]

Proclus' reasons for proposing the presence of the other three Elements are even more ingenious. By applying the Neo-Platonic metaphysics 'everything is in everything in a manner fitted to each', he is able to explain with one physical law the visibility and occultations of the celestial bodies, and the transparency of the rest of the celestial medium. Fire with the 'transparent media', Air and Water, but *without* Earth, is the stuff of the celestial region in general, which we do not see. Fire *with* the 'solid' Earth, and perhaps Air and Water too, is the stuff of the celestial bodies themselves, which we do see.

> All heaven is composed of all the Elements, but in some places Fire predominates with the summit of Earth, in another Fire with the summit of the Air-like (*aerodous*) and in another Fire with the summit of Water, and just as the variation of Air and Fire itself is numerous, so is it for each of them, on account of which some parts are more visible (*horata mallon*), such as the ones that have Fire with the solid (*meta tou stereou*) property, whereas others are more invisible (*aoratôtera*), such as the parts that have Fire with the translucent (*diaugous*) and the transparent (*diaphanous*), and through (*dia*) these it is possible to see the objects above them as when looking through air, but the others intercept our vision . . . Appropriately, the spheres have the more attenuated and more transparent substance (*leptoteran echousi kai diaphanesteran ousian*) whereas the stars have

> the more solid (*ta de astra stereôteran*). (Proclus, *In Tim.*, 3.128.18–29)

Proclus goes much further, for he can explain eclipses. A star or planet which happens to be in front of another in our line of sight appears to hide behind it. For him, this provides sufficient empirical evidence to support his view that there is Earth in the stars.

> There exists a celestial Fire . . . and a celestial Earth – or how can the moon produce a shadow when it is illuminated by the sun and the solar light cannot penetrate through it completely? (Proclus, *In Tim.*, 2.47.9–12)
>
> For to intercept (*antiphrattein*) is the property of Earth – and this is also evident from the stars which obscure the appearance of others (*tais opsesin antiphrattonta*) as they produce a shadow of themselves. (Proclus, *In Tim.*, 2.44.12–13)

At the base of Proclus' astrophysics is his conception that matter can have many states. They may have the same essential qualities vertically down the hierarchy, but each plane is different. To try to draw conclusions about the one from another is like trying to describe a healthy person using a sick person. He employs Aristotelian notions to demolish Aristotle's physics of the heavens and the Elements (a technique followed later by others, such as John Philoponus).

> People who deny that the heavens are made of Fire on the grounds that the nature of Fire is to tend upwards – those we have answered already. However, we need to remind again and again those who are fond of dispute that they speak absurdly (probably the Aristotelians), for they pay attention to this sublunary Fire down-here (*to entautha pyr*), which exists contrary to its nature (*para physin*). Fire does not move naturally upwards (*ou to anô kineisthai kata physin*), if you do not look at the sublunary one but at that which remains in its own place. The one which is moved upwards is led (*agei*) towards its natural place (*eis to kata physin*), but this is not Fire in its natural state. For no body which is in the process of becoming healthy (*hygiazesthai*) is in fact in its natural state. Being well (*hygiainein*) is its natural state, but convalescing (*nenosêkoti*) is natural only to the body in the process of becoming well. Thus for the Fire which is not completely Fire (*mê teleôs pyri*) it is natural to tend upwards. But to that Fire which is actualised (*kat' energeian pyri*) it is natural to remain up there (*menein tô anô kata physin*) and while it remains, if

> it should move, it would only have circular motion. (Proclus, *In Tim.*, 3.130.3–16)

Combined with his theory of motion of the Elements, Proclus' theory of the celestial bodies coheres both with his general Neo-Platonic metaphysics and with empirical evidence. According to his metaphysics, the corporeal level of the celestial entity is inert, but the incorporeal is the source of its power and activity. As in Proclus' theory of the Elements, the dynamic imbues the corporeal. Proclus' celestial objects have both body *and* force. As we shall see later, this distinction will lead him to propose that cosmic bodies move by themselves, that earth is like a heavenly object, and that the sun is the centre of our planetary system.

How do the heavenly bodies move?

As we have seen from Proclus' metaphysics, entities are graded according to a scale of oneness and order. This ranges from the One, which is all-simple and unified, to corporeal matter, which is fragmented in many things. Motion in space and time indicates that things change, and that they come to be and pass away (cf. Aristotle's view of motion). That things decompose and fall apart means that they are not inherently unified but consist of diverse parts. The intelligibles do not move because they are 'above' the partible existence – cosmogonically they precede the birth of time and space. So the degree of simplicity or complexity in the manner in which a body moves reflects how unity and multiplicity, order and disorder, are mixed in it.

The stars of the constellations are fixed relative to each other but revolve in daily period as a group. For Proclus, this fits with his hierarchical arrangement. Movement in a single direction in the category of place marks the simplest kind of change. Thus, he can harmonise Aristotelian physics with Platonic dynamics. The sun, moon and the five visible 'wanderers' (*planêtes*) also revolve diurnally but follow their own different orbits at their own speeds. Their movement is no longer simple but increasingly complex.

The celestial bodies are imperishable, divine, etc. All this was standard Platonic and Aristotelian doctrine. However, Proclus draws subtler distinctions, which are typical of post-Aristotelian developments. The philosophical debate shifts from the division into heavenly and sublunary objects and (reverts) to that into intelligible and sensible. Thus the heavenly bodies become intermediaries standing between the intelligibles and the sensibles.[23] For Proclus, the celestial objects, like the intelligibles, are unchangeable in substance, but, like the sensibles, they are perceptible by the senses. Their movement is essentially orderly, but not completely. The planets, in particular, exhibit a measure of irregularity.

> The irregularity (*anômalian*) is attributed to the stars themselves, but this irregularity has a certain order – for it recurs in fixed periods of time (*tetagmenôn chronôn*) – since the wandering stars are between those which are moving regularly in every way and those which are moving irregularly in every way (*anômalôs*); for they are allotted a movement which is regularly irregular (*homalôs anômalon*) or irregularly regular (*anômalôs homalên*). (Proclus, *In Tim.*, 3.57.2–6)

> The wandering stars . . . have varied and complex movements, but orderly (*en taxei*) and according to certain measures (*metra*) and bounds (*horous*); for their simplicity contains the plurality, their order confines (*synechei*) the variety and their measure delimits (*horizei*) the wandering. (Proclus, *In Tim.*, 3.127.7–11)

On spheres? No

The sphere was the figure that haunted Greek astronomy, and it has haunted Western science ever since. At first, the heavenly spheres had a cosmographical role. Arranging the planets and the fixed stars in broad zones was a way of making their study scientific. Plato, perhaps influenced by the Pythagoreans, was the first to formulate a law of celestial motion. Since the sphere, and the circle, are the geometrical shapes that are more symmetrical than any other, they must be the shapes of the orbits of the equally perfect celestial bodies. Soon Eudoxus produced the first theory of celestial kinematics by mutually interacting spheres. With Aristotle's adoption of it, Plato's ontology and epistemology of the celestial acquired a physical mechanism. This started the great debate: are the spheres real things or simply mathematical devices?[24] Do the stars *really* move like that?

Eudoxus proposed a system of homocentric, counter-rotating spheres in which the stars and the planets are simple points fixed on them. Aristotle translated it into physics. Instead of having the celestial spheres revolving individually at different speeds, he had real, physical revolutions transmitting their motion from one to the next. Still, the first system to combine successfully both the mathematical astronomy and the cosmology of its time proved to be also the last. More systematic observations of the heavens yielded more complex celestial orbits. Consequently, new mathematical models had to be invented to cope with the increasing complexity of the 'phenomena'. These were the eccentric, epicyclic and equant circles. These could yield a multitude of circle-like shapes, including the ellipse[25] (the shape of celestial orbits as discovered by Kepler).

Ptolemy, the great astronomer of Alexandria (second century AD), produced the best system of all, which overshadowed astronomy for centuries both in the East and the West, and reigned over Greeks, Romans, Arabs, Indians and Western Europeans. It was not superseded astronomically until the seventeenth century by Kepler. But its sophistication widened the gulf between mathematics and physics. The various astronomical models may be all well and good, but are they real? If not, should we not be looking for the real celestial laws? Ptolemy seems to have acknowledged the cosmological shortcomings of his mathematical astronomy, for in a separate work, *On the Planetary Hypotheses*, gone are the equants at the very least. The planets are no longer carried around passively but move by themselves within the confines of nested spheres.[26] If we accept this interpretation, Ptolemy's physical astronomy marks a return to the celestial dynamics of Plato.

Proclus is well aware of this gap between celestial mathematics and cosmological reality. But his attack on the theory of solid spheres is not to the detriment of mathematics. In this case, he does not throw out the baby with the bathwater. His treatise, the *Outline of the Astronomical Hypotheses*, on Ptolemy's astronomy, is packed with the most detailed analysis of the planetary orbits and contains a full description on how to construct and use the chief astronomical instrument, the astrolabe.[27] It is the first, and last, substantial evaluation of Ptolemy in antiquity. Astronomically, it is second only to the works of Theon of Alexandria, Hypatia's father.

Proclus' *Outline* contains also the most critical appraisal of Ptolemy's system. Proclus' options were essentially two. They correspond roughly to a Platonic–Aristotelian dichotomy. On the one hand, the 'spheres' are merely parts of regions of the heavens, defined spherically. The celestial bodies move within these areas in longitude, latitude and depth, that is, in three dimensions. Their movement is primarily a simple circulation. The 'wandering' of the planets is usually accounted for by assigning to them the ability to move actively by themselves. On the other hand, the spheres are physical, solid bodies. The celestial bodies themselves are passively moved. Each is fixed on one spot of the sphere which carries it. Planetary movement is accounted for by having many supplementary spheres interacting with each other so that their combined revolutions generate the familiar orbits.

For Proclus, the first is by far the best. He chooses it not only because it has a Platonic pedigree, but also because it fits with his own theory of self-substantiated and self-moving entities. He does not offer any record of Ptolemy's possible psychological solution. The 'spheres' are so placed that each nests neatly into its neighbour without overlapping and by the rule that there should be no void between them. As he explains, although there are many heavenly spheres, heaven as a whole is one and continuous.[28] The doctrine of the nested spheres (which we also see in Ptolemy) become the pillar of medieval astronomy – despite the problem of continuity and contiguity.[29]

> The spheres are like jars (*kadois*) which are placed within each other, the lesser inside the greater; and the insertion of the 'whorl' [*sphondylôn*: a Plato term which Proclus interprets as spheres] is like it, for it makes the expanse of the heavens one and continuous (*hen syneches*). For there is no vacuum at all between the whorls which fit into one another so that there is one continuous surface from the convex surface of the innermost (*endotatôi*) of all spheres as far as to the outermost (*exôtatôi*); for the whole of this depth is called the celestial expanse and not only the surface of the greatest of them. (Proclus, *In Rep.*, 2.216.5–13)

Measurements using the parallax method had shown at an early stage in Greek astronomy that the stars are far indeed. The maxim that described the distance of the fixed stars relative to the earth's radius was: 'the earth has the relation of a point-centre to the circle of the fixed stars' (Proclus, *In Rep.*, 2.218.10–11; cf. Ptolemy, *Syntaxis*, 1.6).[30] But Proclus takes it further. The fixed stars are not distributed along a single ring-layer but along many. Some fixed stars are closer to earth, others more distant. And in a unique observation, Proclus points out that because of this we see *binary stars.*

> The outermost whorl of the fixed stars contains such a large number of stars scattered (*katesparmenon*) in all its depth . . . the fixed circle is vast as it has been shown by the distances and numbers of the stars which are not one surface only, as it is evidenced from the optical double stars (*diplôn phainomenôn asterôn*). (Proclus, *In Rep.*, 2.218.5–6; 218.13–16)

However, the depth of the planetary spheres had always been in dispute. Proclus reports on a much earlier theory, according to which their dimensions depend on the size of each planet. He is our only source for it.[31] Proclus himself comes to accept the Ptolemaic theory according to which they are measured by the distances at apogee (furthest from earth) and perigee (closest to earth). In other words, the maximal and minimal parts of a planet's orbit define the dimensions of each sphere. Proclus accepts it because it is the least inconsistent with observation. Nevertheless, he accepts it reluctantly because he feels that this is the thin end of the wedge for ascribing cosmological reality to the various eccentric and epicyclic circles to which he is opposed.[32]

Therefore, according to Proclus, the spheres are not solid bodies at all, but regions of space.[33] They are made of Fire blended with a kind of Air or Water.[34] But if they are mere regions of space, surely they have no physical function. For Proclus, this is partly true. As in his theory of the Elements and space the corporeal contains something incorporeal which is power, so in his theory of the celestial bodies and spheres there is something incorporeal which acts through it. Thus the celestial spheres (and 'zones' of Chaldaean astronomers) are not physical but the metaphysical intellections (*noêseis*) of the celestials themselves, which 'think the same thoughts about the same objects of thought and always in the same manner'.[35] So the spheres are, physically, just tracks in which the stars move by themselves. Metaphysically, they are the incorporeal patterns of their agent, which keeps them in a regular and even motion with its 'governing power' (*dynamin kratikên*).[36]

By themselves? Yes

Neo-Platonic metaphysics leads Proclus to the conclusion that the celestial bodies move by themselves. They move by their own power. The celestial bodies travel entirely unhindered through, but also physically unsupported by, the celestial medium. They do not need any crystalline spheres, or epicycles, to carry them around. In this respect, Proclus' theory of celestial motion marks the demise of Aristotle and anticipates the birth of modern celestial dynamics.[37]

He bases the theory on the (Neo-)Platonic concept of self-motion. A body taken by itself is an inert quantity, much like a dead body which can be tossed about but cannot move by itself. It can only move by the actions of agents distinct from it. Celestial motion consists of the motive action of the principle of self-motion, soul, upon the body, that is of the incorporeal part of the celestial upon the corporeal.[38]

> The celestial objects must be animated . . . both by the cosmic soul and by their own individual soul (*idias hekasta psychês*), because if they are like the whole heaven in which they are, they circulate. And if so, they are all moved in a circle about their *own centres* (*kentra ta heautôn*). And if so, and all unceasing motion has its own individual

> motive cause (*idion kinoun aition*) and there are so many moving causes as individually-moved bodies, as Aristotle says (*Phys.* 7.4), the stars must have their own individually appointed souls which move them. (Proclus, *In Tim.*, 3.117.11–22)

First, periodic motion in time derives, according to Proclus, from the characteristic property of soul.[39] *Psychê* is eternal in essence but its effects are temporal. The movement that is both perpetual and temporal is the periodic, for it has neither beginning nor end. *Apokatastasis*, which means to return to one's point of origin, defines a measure of time, a clock (Proclus, *El. Th.*, prop. 199). The concept of periodic time had fuelled the debate of what is the length of the 'Great Year', the *apokatastasis* of all the periods and movements in the universe. Aside from the considerations on cosmic death and rebirth, the concept of periodic time and movement formed the kernel of the astronomical methods in measuring the rapidity of the orbital motion of the planets. Ancient astronomers could not have observed the axial periods (the moon does not show this).[40]

Secondly, circular movement in space follows from laws of symmetry in science. Although periodic movement in time does not have to mean circular movement in space, Proclus' attitude to the virtues of the circular shape is the same as that of all Greek philosophers and astronomers. Its symmetry from every side makes it literally and metaphorically the perfect shape for the smooth and continuous gliding of the celestial bodies.

> The discourse on movement follows that on animation; because each of the stars has a soul, and through her it is allotted a proper movement; for the soul is the principle of motion (*archê kinêseôs*). And it is also connected with the theory of their shape (*schêmatos*); for each of the stars has a circular shape proper to it, and this it receives from the Efficient cause, and has by necessity an activity and circular motion which is appropriate to the circular shape. (Proclus, *In Tim.*, 3.119.17–23)

The qualities of symmetry, beauty and simplicity of the sphere, and their importance in the pursuit of truth, were valued as much by the ancient as they are by the modern theoretician. However, in astronomy it was Kepler, not Copernicus, who first broke the mould of the perfect circular orbits and made the ellipse, a circular shape with two centres, the stable orbit of the celestial bodies.

Nevertheless, the theory that the celestial bodies move by themselves contains its own criticism. It provides an elegant integration of astronomy with metaphysics, but simultaneously makes it susceptible to problems raised by new empirical evidence. If a starry body moves in the way that it does because of what it is (metaphysically), surely every observed irregularity, every complex behaviour must be ontologically real.

3. CHALLENGED BY THE STARS

Proclus analyses the motion of the fixed stars and finds that they exhibit two kinds of rotation. They possess two degrees of freedom to move. The one is the collective and the other is the individual circulation. If the daily course of the heavens once every twenty-four hours reflects one step from simplicity to complexity, the proper self-rotation of each fixed star reflects the second.

Thus the stars fit in the hierarchical arrangement of properties and entities. First, they move together as a group. The stars are 'fixed' in their constellations. Their diurnal revolution is from east to west, which in Greek astronomical jargon was called in the direction 'towards the leading' signs of the zodiac (*epi ta proêgoumena*).[41] Plato in the *Timaeus* had called this the circulation (*periphora*) of the Same. It could be regarded as linear or tangential, since Plato had also referred to it as 'forward' (*eis to prosthen*) (*Tim.* 40a–b). Proclus explains that this is just a way of describing the movement of a fixed star from one place in its orbit to the next in the 'leading' direction. In this sense, a star moves 'forwards'; it is not true rectilinear motion, since the overall trajectory is circular.

Secondly, each fixed star moves about its own individual centre spinning in an axial rotation on the same spot.[42] Proclus does not specify the sense of this self-rotation. It would be safe to assume that it would also be right-handed by imitation of the Same circulation. This is the star's proper movement, a conclusion unique to Platonism.

The fixed stars, however, presented a challenge. After Plato and Aristotle, astronomers discovered that the 'fixed' stars exhibit a backward movement along the direction that planets move. The discovery of the precession of the equinoxes was one of the prestigious achievements of Greek scientists. As Newton showed centuries later, the sun, the moon and the planets exert different gravitational pulls on the earth's spheroid mass. These gravitational pulls are not on the same plane (the equatorial). This causes the earth to tilt like a spinning top, which results in a small circular movement around the ecliptical axis. The precessional rotation is extremely slow: it has a period of approximately 25,800 years. Therefore, the phenomenon is almost too minute to notice unaided by equipment. Hipparchus (second century BC) discovered that the longitude of certain stars had increased over time while their latitude with respect to the ecliptic had remained the same. The ecliptic is the circle of the motion of sun – the band on either side projected against the heavens defines the 'zodiacal' constellations in which the moon and the planets move. Some 265 years later,[43] Ptolemy rediscovered this change of longitudes with his own observations. He was able to confirm that the longitudinal changes were completely consistent with a total movement along the ecliptic, the band of the revolution of the sun and the planets. This led him, like Hipparchus, to abandon the celestial sphere as a framework for astronomical coordinates. Instead, he assigned coordinates based on the ecliptic.

Subsequent mathematicians and writers on astronomy accepted Ptolemy's account of the phenomenon. However, Proclus rejected the precession emphatically. Why did he not accept this great achievement of Greek science? Was it just a 'whimsicality' (as A. E. Taylor called it)?[44]

Proclus is interesting because he stands alone in the rejection of the precession. From Ptolemy's time there is no record of any similar case, not even among the ranks of the (Neo-)Platonists, notably Hypatia's father, Theon of Alexandria (fourth century), and Simplicius, the Neo-Platonist who first studied under Ammonius and then came to Athens. The most obvious reason, of course, is that as a Platonic 'Successor' bearing the responsibility of defending Plato's doctrines, Proclus had to regard the precessional movement as *a priori* objectionable (it contradicts overtly what Plato said about the fixed stars in the *Timaeus*). Some historians of science blame Neo-Platonism for the neglect of astronomy in favour of metaphysical dogmatism.[45] On the other side, a more recent, sympathetic synopsis of Proclus' astronomy, including on the precession, also locates Proclus' views firmly in the context of Platonic exegesis and Neo-Platonic metaphysics.[46]

As we have seen, Proclus' theory of the stars fits with his metaphysics about the hierarchy of states of motion in the universe. This seems to lend support to the view that Proclus rejects the precession for metaphysical reasons. Here are two of the key passages where Proclus finds objectionable the suggestion that the fixed stars might have not only an additional movement, but a planetary-like one at that.

> [The astronomers' theory] of the fixed stars, for they are called, and indeed are, 'non-wandering' (*aplaneis ontas*), does not leave them in peace (*mêde apragmonas*), but according to their observations even they are supposed to become more or less distant from the celestial pole and appear to occupy different places at different times, as if they themselves move, just like those we have generally accepted as planets, about some other pole, not that of the world. For which

> reason it is necessary to find, how do they move, what is their circular motion, and how much is their periodic time (*apokatastatikos chronos*). (Proclus, *Hyp. Astr.*, 14.17–23)

> This movement of the fixed stars, as we showed earlier, we do not find acceptable. But if this were not permissible, it is evident that even the hypotheses of the five planets would be in difficulty (*an aporôs*). For [the hypothesis] makes use of the movement of the fixed sphere towards the rear of the daily motion (*eis ta hepomena*). And yet that does not necessarily allow this movement, and the phenomena testify [to it]. For how are the stars of the Bear always visible (*aeiphaneis*) now, being always visible after these many years since the time of our ancestors, if they were moving one degree every hundred years about the ecliptic pole, which is different from that of the world? For if they moved by so many degrees already, necessarily they would no longer scrape the horizon, but parts of them would have become invisible (*aphaneis*). These things are evident. And all the sages [*sophoi*: the wise] agree with this, and have the sphere of the fixed stars move around the Pole of the World [i.e. the north celestial pole], not around that of the ecliptic. The planets indeed have moved towards the rear of the daily motion about the poles of the zodiac. (Proclus, *Hyp. Astr.*, 234.7–22)

However, this still leaves unanswered the question of why the *other* (Neo-)Platonists did not *also* deny the precessional movement for similar reasons. Proclus' student Ammonius (when he later became head of the Alexandrian School) verified it personally. Simplicius not only accepted the precession but also sanctioned a modification of the existing cosmological system, which aimed to naturalise it properly. Neo-Platonism was not rigid but responsive to revisions owed to empirical evidence.

Further, according to his Neo-Platonic metaphysics, entities at higher levels of being are said to anticipate and 'contain the principles' of those that are at lower levels: hierarchical superiority indicates that one state of being is more complete, 'perfect', than another. As we have seen, in relation to celestial and terrestrial bodies, Proclus remarks that the planets exhibit a mixture of regularity and irregularity because they embrace the 'principles' and 'paradigms' of sublunary bodies and their motion. That is, the planets move as they do precisely because it befits their proximity to the entities next to them in the hierarchy of being. So the theoretical framework of Proclus' metaphysics, far from being incompatible with the suggestion of a planetary-like movement for the fixed stars, is ideally suited to account for it. Had Proclus chosen to accept it, he could just as easily have said that the fixed stars contain the paradigms of planetary nature, including their characteristic easterly movement. This, and Ammonius' and Simplicius' acceptance, are sufficient to underline that Neo-Platonic metaphysics was not closed, nor a dogmatic master over empirical science. Consequently, I do not think that Neo-Platonism and Platonic exegesis are responsible for Proclus' rejection of the precession. When we dig deeper, we find Proclus coming to grips with a problem central to epistemology and the philosophy of science.

Proclus supports virtually all his criticism of the precession with empirical evidence. He thinks that observation contradicts the claim that there is a backward movement of the fixed stars. One of Proclus' main points is that if there were a precession, many stars which have always been visible should have become invisible, and vice versa. This well illustrates his grasp of astronomy. Indeed, over a long period of time some stars along the ecliptic should have slipped below the horizon at latitudes where they would otherwise have been visible all the year around. As an example, he focuses on the constellation of the Great Bear.

> The celestial phenomena are sufficient to convince those who have eyes and can see; for it is evident that, if the fixed stars were moving about the poles of the zodiac circle in the direction following the order of signs [*eis ta hepomena*; i.e. eastwards], the Bear, which since Homer's time [*Iliad*, XVIII, 487–9] has always been visible [*aeiphanous*: it is circumpolar], must set in these latitudes in no small part, since it should by now have moved by more than fifteen degrees . . . Yet, the Bear is still always visible . . . Therefore the motion of the fixed stars in the direction following the order of zodiacal signs, which they keep on babbling about (*thryloumenê*), is not true (*ouk alêthês*). (Proclus, *In Tim.*, 3.125.4–16)

Let us look closer at this claim. Hipparchus and Ptolemy had calculated the minimum rate of the precession at 1 degree of arc per 100 years. So Proclus seems to set Homer at 1,500 years earlier than his time, that is, at about 1000 BC. He is aware that this was a minimum estimate because he qualifies the number with the statement 'by more than' (*nyn pleionas*). Now the rate of 1 degree of arc per 100 years is equivalent to 36 seconds of arc per annum. Actually, the true result of Hipparchus' observation was 45 seconds of arc in a year (1° 15′ of arc per 100 years), which compares well with the modern values for the precession.[47]

To say that the precession affects the visibility of stars is entirely correct. The precessional shift changes not only the longitudes but also the latitudes of stars with respect to the celestial equator – which is an extension of the earth's equator to the heavens. This is because it takes place along the ecliptic, which is itself inclined with respect to the celestial equator (by about 23 degrees and 26′ of arc). A star can be seen when it is above the observer's local horizon. For a star never to set for that observer, that is to be circumpolar, its declination, the angular distance from the celestial equator, should be more than the colatitude (90°-latitude) for that observer's place.

However, the component of the general rate of precession (along the ecliptic) projected on the declination is by proportion smaller. Further, the rate of change in declination due to the precession is different for different stellar positions. Ptolemy himself had noted that (*Syntaxis*, 7.3, 19.1–10) this is totally consistent with a movement along the ecliptic. This makes the value for the precession in declination a maximum, not a minimum. This is why in Proclus' time the stars, which he claims should have set below the horizon, are still visible. So, both the data and statements, as quoted by Proclus, seem to show that he is overestimating the effect of the precession on the declination of the stars in order to magnify the contrast between the effect of the phenomenon and the empirical evidence of things as they are.

Proclus is also sceptical of the reliability of the observational data in support of the precession. He reminds the reader that such a subtle movement requires many observations and long time to be verified accurately. Then he contrasts the low number of observations listed by Hipparchus and Ptolemy and the relatively short interval between them (approximately 400 years) compared with the number made by the Babylonians and Egyptians. They made innumerable observations over thousands of years, and yet they say nothing about a precession in their records. To notice it, an astronomer must have a long track-record of observations conducted over long periods of time. Otherwise, it might just be an illusion.

To complete his case, Proclus launches an assault on the methodology of those who promulgate such a phenomenon. There is a syllogistic form, False–False–True, which shows that truth can follow from falsehood (Aristotle, *Pr. Anal.*, 2.2–4). This happens if premises are false in a particular way. For example, we could say that: all hairy things bark; dogs are hairy; so dogs bark. More starkly, we could say that: all blue things are tailed; foxes are blue; so foxes are tailed. There is nothing wrong with the logical validity of these statements. They stick to the rules for a sound deduction. They tell a sound story. What is wrong with them cannot be tested by logic. If the result matches what appears true to the eye, and we have a sound narrative, we have no internal criterion to tell that the premises are true, too. So a theory that purports to explain a phenomenon may just as well be a total fiction.

> I would principally refer to the Chaldaeans whose astronomical observations span whole cosmic periods . . . Why then are we asked to accept as evidence (*martyrometha*) the records of few observations and newfangled sightings (*nearoprepê theamata*) which are not so accurate, when the former testify in favour of the doctrines of the Ancients about the movement of the fixed stars? For do they not know that it is possible to arrive at a true conclusion from false premises (*ek pseudôn hypotheseôn*), and that it is not necessary for the concluding product, when in agreement with the phenomena, to be a sufficient proof (*tekmêrion hikanon*) confirming the truth-value of the premises? (Proclus, *In Tim.*, 3.125.27–126.5)

A counter-argument is that Proclus downgrades the observations conducted by Hipparchus and Ptolemy too much. He does not take into account their quality. Hipparchus and Ptolemy may have had fewer numbers of observations and a shorter time-interval to verify the alleged phenomenon, but their observations weigh more because of their quality or methodology. So far we can tell, the Babylonians and Egyptians were mainly interested in observing stars at certain key points near the horizon (risings and settings) and near the meridian (culminations), not in plotting whole celestial movements.

Note that Proclus is all the time arguing against a planetary-like motion of the fixed stars. He says nothing about the equinoxes themselves. This is because it was not just a question of whether we see that the equinoxes precessed, but of whether all the fixed stars actually move backwards (*epi ta hepomena*: i.e. in an easterly direction). So what is his precise view of the phenomenon? To understand it, we must examine more carefully the discovery of the so-called precession of the equinoxes.

If we look at the actual phenomenon in its raw form, it does not point to the precession of the equinoxes at all. Basically, it is a change of the angular astronomical distances *between* the fixed stars and the equinoctial (and the solstitial) points. In other words, the positions of the stars change with respect to the points which were, and are, used as references for their astronomical coordinates. If one looks with an unprejudiced eye at a fixed star in different epochs, one simply sees that the coordinate distance has increased over the time-interval. This leaves not one but at least two interpretations of the phenomenon. The fixed star itself has somehow moved to the east, like a planet; or, the star has remained fixed but the grid itself has moved to the west. The two options are contradictory insofar as the coordinate grid is by definition the reference of stellar movement. There is no other framework of motion. Cosmologically, they are certainly contradictory. The one has the earth stationary (and the stars moving) and the other has the earth rotating around its own axis (and the stars stationary). What is supposed to stay put and what is supposed to move depends on factors apart from logic and the raw empirical evidence itself.

Hipparchus, who recorded it first, seems to have preferred the interpretation that it is a slipping of the equinoxes, judging by the title of the treatise in which he published his observations (as reported in Ptolemy's *Syntaxis*), which betrays his personal opinion on the matter: 'On the Displacement of the Solstitial and Equinoctial Points' (*peri tês metaptôseôs tôn tropikôn kai isêmerinôn sêmeiôn*).[48] The key term *metaptôsis* is sometimes translated anachronistically as 'precession'. Strictly, the term *metaptôsis* means 'change' (or 'variation'), which is neutral; the translation 'displacement' conveys accurately this nuance. However, Hipparchus' precession of the equinoxes was void of cosmological content, and was strictly mathematical and classificatory, part of the scientific enterprise for reliable data and improved methodology for their collection. Indeed, its basic astronomical context was the calculation of the sidereal versus the solar year. Thus Hipparchus regarded it as an irregularity of the length of the seasons: of the solstices and the tropics.

Ptolemy, on the other hand, who rediscovered and publicised it most, took a clear cosmological stance. He refers consistently to an ecliptical movement of the whole of the sphere of the fixed stars, not of the equinoxes. For Ptolemy, the distant stars of the constellations are 'fixed' solely in the sense that they maintain the same position relative to each other. For him, both the celestial and the ecliptical poles (axes) are fixed and so are the equinoctial points.[49] This follows directly from his physical view of the earth as an immovable body, a theory posited conspicuously at the beginning of his treatise:

> we find it certain, to the extent that the time elapsed allows, that *sphere of the fixed stars* makes a shift of this amount eastward from the tropic and equinoctial points, and moreover that this movement is effected about the poles of the ecliptic and not about the poles of the equator. (Ptolemy, *Syntaxis*, 7.4; emphasis mine)

Proclus, like everybody else, followed Ptolemy's authority on matters of astronomy (to talk of anything more than authoritative theoretical explanation, for example Kuhnian 'paradigm', might be too strong). But we must distinguish between a mathematical theory that makes no claim to cosmological reality, and one that does. When Proclus attacks the phenomenon of precession, he does so because his view of it is coloured by Ptolemy's claim that it is for real in just the way that he described it.

It is in the arena of reality that Proclus rejects the given truth that the fixed stars move collectively along the ecliptic against their daily motion. In this respect, he is in fact correct. The fixed stars do not precess. This, I propose, is the principal reason for Proclus' rejection of the precession. It also links with his general scepticism of Ptolemy's system.

However, this did not lead Proclus to adopt the displacement of the equinoxes. First, with Ptolemy's reinterpretation of the past, Hipparchus was totally subsumed by Ptolemy on the cosmological explanation of the precession. Secondly, the precession of the equinoxes is inconsistent with the earth's physical immobility. Proclus' predicament is that he rejects (correctly) the reality of the displacement of the stars, while resident in the cosmological frame that coheres with it. The precession of the equinoxes belongs to a contradictory cosmology involving a physical rotation of the earth itself.

Later, Simplicius used Proclus' argument regarding the longevity of the observations of the Babylonians and Egyptians to support the eternity and unchangeability of the heavens. He did this to counter the Christian John Philoponus, who professed that, as the Bible says, the cosmos had a beginning in time.[50] Simplicius accepted the precession, but very cautiously: 'it could be said perhaps to be more true' (*alêthesteron isôs an eiê legein*) – only after Ammonius had verified it personally by observation. The empirical evidence was not strong enough to make a firm and unqualified decision. To account physically for the precession, astronomers proposed a ninth sphere and more, beyond the seven spheres for the planets and the eighth for the stars.

> The astronomers also know this, since they necessarily place the starless and truly fixed (*ontôs aplanê*) sphere above what is called fixed [i.e. the fixed stars]. For they believe that this sphere which contains the multitude of stars moves from the west by one degree in a hundred years, and thus they need a sphere to carry round the visible revolution from the east. (Simplicius, *In Phys.*, 643.31–6)

Compare now Proclus' rejection of the precession against those who did accept it, but at a cost to simplicity in explanation. Does Proclus' rejection of the precession (of the stars) seem regressive or reasonable? Simplicius still thought in terms of a displacement of the stars, because he accepted the existence of an extra, starless sphere beyond that of the fixed stars, which drags them all in an easterly direction.[51] The single reason for such a bizarre sphere was to supply the cosmological backbone to the precessional movement of the stars. With the subsequent perception of anomalies in the precession, additional starless spheres were added until the precessional movement acquired the bewildering complexity of planetary movement. By the sixteenth century, this murky situation was an important issue, and Copernicus demanded a cleaning-up.

The precession was deemed scientifically important, worthy of acceptance or dispute, only when it was regarded as an event that actually exists for real. But the observers had to supply what in their opinion changes *before* they identified and classified it as such-and-such a phenomenon. This subjective inference coloured the reality of the event. Scientists and philosophers who were concerned with the phenomenon had to speculate and rely on criteria other than the evidence of their senses. The 'precession' did not become liable to the criterion of economy until the phenomenon became nearly as complex as that of planetary motion. All this is in addition to the criticisms regarding perceptual illusion. For the original discoverer, the phenomenon was no more than an anomaly and did not merit an explanation anchored in reality. After 250 years, when the parameters of the displacement had had time to become more established, it became a regular movement. When Ptolemy entered the scene, he dominated it because he provided what appeared to be a realist account. On the issue of simplicity and reality (see also Ptolemy, *Syntaxis*, in the section on the challenge of the straying planets), we have his following well-documented remark:

> Now let no-one, considering the complicated nature of our devices, judge such hypotheses to be over-elaborated. For it is not appropriate to compare human [constructions] with divine, nor to form one's beliefs about such great things on the basis of dissimilar analogies. For what is more dissimilar than the eternal and unchanging with the ever-changing? . . . Rather one should try, as far as possible, to fit the simpler hypotheses to the heavenly motions, but if this does not succeed, those which fit . . . We should not judge simplicity in heavenly things from what appears to be simple on earth, especially when the same thing is not equally simple for all even there. For if we were to judge by those criteria, nothing that occurs in the heavens would appear simple, not even the unchanging nature of the first motion, since the very quality of eternal unchangingness is for us not only difficult, but completely impossible. Instead [we should judge simplicity] from the unchangingness of the nature of things in the heaven and their motions. (Ptolemy, *Syntaxis*, 13.2: 533)

Ptolemy acknowledges the existence of an external reality but refuses to make any links between it and our perception of it. We perceive phenomena, and form hypotheses and models that fit them as well as possible. But we lack valid analogies, and so the essential nature of reality is hidden from us. The celestial bodies ought to move regularly as perfect, rational entities, but apparently they do not. Ptolemy offers us this contradiction, which encapsulates the challenge of reality. But he gives no satisfactory solution. He proposes mathematical constructions that are instruments for prediction and have no explanatory power. But he asks us to accept them by appealing to reality. He goes on to propose complicated constructions. But he appeals to an existence that has its own superior standards of simplicity.

Proclus makes his criticism from a clear and consistent realist position. There *are* valid correspondences with the objective, transcendent domain. What we think and perceive are copies of reality. So, his main accusation is, in effect, that Ptolemy and fellow astronomers are not content with their tools of description but try to dress their devices in a realist garb to stake their claim in objectivity. He finds their accounts of disputed phenomena unconvincing, precisely because they fail to meet the proper criteria: simplicity, coherence with reasoned and established truths, and correspondence to the ontology of reality. To expose the falsity of Ptolemy's realist claims, Proclus employs some arguments of the sceptic and the fictionalist (scepticism and fictionalism became popular in the sixteenth century in response to the problems of celestial motion). Proclus was correct to reject Ptolemy's muddy philosophy of science. However, in doing so, in this case, he threw away the discovery together with the theory that purported to explain it.

We must give Proclus credit for his courage in questioning the Ptolemaic authority, of which the so-called precession was part. In this, like in other aspects of astronomy and physics, he anticipates the early moderns who finally broke the Ptolemaic and Aristotelian stranglehold on European science.

4. CHALLENGED BY THE PLANETS

The challenge of the precessional movement was but a fraction of the challenge that the planets presented to Greek philosophers and scientists. The Greeks aimed to trace the whole of the orbital path of celestial bodies. The problem was how to describe, let alone explain, the behaviour of a body that generally moves evenly in a circle but at regular intervals is seen to stop, backtrack, trace a loop well away from its regular path, and then resume its circular orbit. Even the sun and the moon, whose orbits are free from retrogradations, exhibit deviations from a truly uniform rotation. The angular speed of the sun is not constant, so we have seasons of different length, and the moon appears to wobble in latitude as it travels around the earth. Moreover, why do some of the five planets which retrograde stay always close to the sun (Mercury and Venus) while others do not (Mars, Jupiter, Saturn)?

As far as we know, the Babylonians had not noted these as anomalies. They concentrated on predicting the periodicities of the celestial bodies, their recurring cycles. So it is possible that, when the Greeks absorbed some of their knowledge, they also absorbed the idea that the heavenly bodies move always regularly. Nevertheless, the philosophers were the ones who made absolute regularity the fundamental requirement of Greek astronomy. The mathematics of the perfect circle and the ontology of imperishable existence converged. Besides, astronomers did not discover all these irregularities at an early stage. So, after they had established that the stars rotate uniformly, both from observation and theory, it was just a matter of accommodating the 'wanderings' in the best possible manner.

Proclus views the movement of the planets as part of his metaphysical hierarchy. If the diurnal rotation of the heavens represents the first step from simplicity to complexity, and the two simple movements of the fixed stars the second, the variety of the planets represents the third. Their complex mode of motion is appropriate to a state proximate to that of disorderly change, the sublunary.

> Being intermediaries (*mesoi*) between the fixed stars and those moving in straight lines (*kat' eutheian kinoumenôn*), they have a mixed movement (*miktên kinêsin*), viz. they are carried in altitude and depth (*eis hypsos kai bathos*) and are moving both direct (*propodizontes*) and retrograde (*hypopodizontes*), but it all takes place in regular periods of time (*en chronois tetagmenôs*). (Proclus, *In Tim.*, 3.147.9–12)

First, the daily revolution in a westerly direction is not the only cosmic movement imparted to them as a group. Collectively they also have a slower, annual movement along the ecliptic from west to east (which Plato called the 'Other' circulation). The astronomers referred to it as the direction 'following' the order of the zodiacal signs (*epi ta hepomena*).[52] Secondly, the seven planets move along the ecliptic with their own different speed.[53] Thirdly, according to Proclus, each planet has its own proper motion. But this is no longer one and single, that is, a pure axial self-rotation; it is many. This inherent proper motion is responsible for the numerous 'anomalies', namely the excursions in latitude and the retrogradations (of the five proper planets).

> It is the characteristic property (*to idion*) of the fixed stars to move 'towards the same things' (*kata ta auta*) 'on the same place' (*en tôi autôi*) with their own individual movement... but the planets have 'changes in direction' (*tropas*)[54] while they travel through the heavens . . . It is evident therefore that the planets become more distant from, and nearer to, earth by themselves (*di' heautôn*) and make the 'changes in direction' in latitude by their own marching and not by being carried by others (*ouch hyp' allôn pheromena*) such as some say, that is by certain counter-acting spheres [*anelittousôn tines*: the system of Eudoxus and Aristotle], or by the epicycles, since they have as it were in their own singular nature both a single and varied mode of motion, with which they advance and retrace their path in a spiral form (*helikoeidôs*) and change the form of its circulation in all various ways; hence their motion is threefold. The one is that with which they both change in direction and move, moving about their own centres and in latitude and depth, the second that with which they are led around (*periagetai*) towards the left [*ep' aristera*: to the east] by their own circles, and the third that with which they are led around by the Same circulation which governs (*kratousês*) all the circulations of the Other. (Proclus, *In Tim.*, 3.127.29–128.13)

So, while the fixed stars traverse the heavens in one direction only, the planets do it in all six: in longitude, forwards and backwards (or right-handedly and left-handedly, depending on the point of view); in latitude, up and down; in depth, closer and further (from earth) (or, from another point of view, higher or lower from earth, since depth equals distance from earth equals height).[55] The planets do it both regularly and anomalously. In Greek philosophy, we may reduce the challenge of planetary movement into two: the loops in latitude and the retrograde travel; the implication that perfect objects suffer contrary actions.

How can they stray?

As we have seen, for Proclus the celestial spheres do not physically exist. Those who claim otherwise seem to use them as artifices, like the mechanical stage-god in Greek theatre-plays who emerges to resolve the complex plot in the nick of time.

> The irregularity is only apparent through the contrary motion of their revolutions and through the retrograde motions (*antiperiphoras*), which are explained either by the epicycles and eccentrics or by other causes (*aitias*); but not all hypotheses are equally likely to be true (*to eikos*), and of those which have been invented (*eskeôrêmenai*) by the later thinkers some are far from the simplicity of divine things and others suppose that the motion of the celestials is sustained by just as if it were a machine (*hypo mêchanês*). (Proclus, *In Tim.*, 3.56.25–31)

Proclus derives his theory of planetary motion directly from the metaphysics as is applied to celestial movement. Since the stars revolve with their own power, the same principle responsible for their regular motion must also be responsible for their irregular motion. Like other Platonists before him, including Aristotle in his early period, he focuses on the concept of volition (*boulêsis*). If the planets are self-substantiated and self-determined entities, they must also possess that which empowers them to move one way as opposed to another. This is essentially not different from exercising what we commonly know as choice. So the problem of the irregular movement of the planets can become part of the wider philosophical problem of voluntary and deliberate action.[56] Proclus' approach may at first appear strange, but what he is doing is to seek a solution within, not outside, his philosophy. This he tries to do by comparing the problem with similar problems in other areas of knowledge.

> These stars move in different ways without needing these sorts of contrivances [*mechanêmatôn*; it can also mean mechanical devices] . . . hence this variety of movement must depend on the motion of their souls according to whose volition the bodies are moved faster or slower, but not through lack of power (*astheneian*) . . . for the very same irregularity is effected in ordered intervals of time (*en tetagmenois chronois*). (Proclus, *In Tim.*, 3.147.1–7)

> For the planets are not moving irregularly through lack of control like the inanimate things, but through the volition of their souls. And the various intellections (*noêseis*), which are called 'zones', are turning with their own order and guide the apparent indiscipline of the bodies (*phainomenên tôn sômatôn ataxian*) into their proper order by preserving with their own power (*dynamesi*) each of the planets. (Proclus, *In Tim.*, 3.133.4–10)

However, there is an objection which we may aim, even anachronistically, at all the dynamical, physical explanations (as distinct from the kinematical and mathematical), which rely on the action of a force immanent in bodies. They carry the concept of self-action to its extreme and fall into the trap of spontaneous action, which renders scientific explanation impossible. What kind of explanation is it to say that a cosmic object moves most of the time regularly but at some times irregularly because it just chooses to do so? Surely the explanation is as mysterious as that which it purports to explain (the explanandum). As has been pointed out (G. Vlastos, *Plato's Universe*, p. 59), the explanatory value of such an explanans would have been fake, for it could not provide a reason why a body moves this way as opposed to any other. Saying that it chose to do so adds nothing more to our understanding. Such criticism is more poignant for Proclus. He relies exclusively on free motion in space (Ptolemy seems to have included some solid ring-spheres). We object because, surely, spontaneity implies indeterminacy. This in turn means, at best, irregularity, if not total randomness and chaos. How can we have science if cosmic bodies go here and there because they fancy doing so?

Nevertheless, this does not hold for Proclus' conception of the celestial objects. The immanent moving principle of the celestials is both orderly in itself and deliberate. So such spontaneity is by nature orderly in intention.[57] It is not by accident or chance. For the Greek, free will does not necessarily mean indeterminate, irrational behaviour. It means the freedom to pursue a single purpose without interference: to do one's best. This idea is no Neo-Platonic special-purpose invention. Both in Platonic and Aristotelian philosophies, the celestial bodies have reason. Interference can only mean those unruly influences from the material world, which is indeed chaotic. Their single purpose is none other than order, their 'good'. In this context, the hypothesis of self-moved planets renders their orderly movement inherent to them rather than dependent on constraints from the outside (spheres).

Proclus emphasises repeatedly that the 'wandering' is not due to lack of power or control. It is not due to a 'weakness' (*astheneia*). This is reserved for the sublunary level of gross matter and the agitations associated with it. Besides, the planetary anomalies take place in regular, ordered terms, 'in measures and bounds', which are after all predicted successfully by mathematics. As we have seen, philosophers and astronomers appealed to a reality whose standard of orderliness transcends our limited, human standards. Ptolemy, for example, repeats this sentiment in his physical account of the heavens, *Syntaxis* (13.2):

> It is not fitting to judge the very simplicity of heavenly objects from those that seem to be simple with us, when not even with us is the

> same object equally simple to everyone alike. . . Rather he should judge their simplicity from the unchangeableness of their substance in heaven itself and of their movement. For them all would appear simple and more so than those things that seem so to us, since it is unthinkable that there is any labour or difficulty in their revolutions.[58]

In this context, the part of the original criticism which remains is that the explanation is no less obscure than what is to be explained. How does irregular movement arise in such perfect objects? Proclus here offers a variety of responses. It is only when we have collected them together that we discern a method. This is to break down the so-called irregularities and see which ones are truly problematical. Some irregularities thus prove to be no more than cases of combined action. It is only when actions compete for the same thing, and compete in opposite directions, that he isolates the problem. Contrary actions have no consistent result: contrariety can yield anything.

As we have seen, Proclus rejects physical solid spheres, whose combined revolutions can produce the desired orbits. His celestial objects are dynamic. So he first puts forward as solution the combined effect of different actions. In fact, he is a pioneer of dynamical geometry, the geometry of the moving point, *locus*. A single point generates complex curves by following at the same time many different simple trajectories in space. Copernicus subsequently employed one of his theorems of combined motions. Proclus is thus cited in one of the most famous works in astronomy.[59]

Proclus uses his concept of the moving point to minimise the implication that the planets are subject to contrary actions. As Aristotle had established, the heavenly substance is unchangeable, neither generated nor perishable, because there is no action in circular motion which can oppose: 'change, generation and perishing take place among opposites'.[60] Proclus accepts it. His statements in the *Elements of Physics* – the physics of Aristotle – say much the same. More importantly, he does not override them elsewhere (such as in the *Commentary on Plato's Timaeus*):

> Those bodies which move circularly by nature are not subject (*oute epidechetai*) to either generation or perishing. . . for if something is generated and perishes, it comes to be from a contrary (*ex enantion ginetai*) and passes away into a contrary (*eis enantion phtheiretai*). Except that which moves in a circle does not have a contrary; therefore it is ungenerated and imperishable. (Proclus, *El. Phys.* 2, prop. 5)

Since Proclus' theory of celestial motion pivots on self-motion, the changes in direction of the planets imply that their self-moving principles are subject to contrary actions. Therefore by Aristotle's rule the wandering of the planets would make them perishable rather than everlasting celestial bodies.

He points out that the looping of the planets is but the *locus*, the combination of several movements executed on different planes. This links with his statements in defence of Plato's theory of four Elements, where Proclus underlines that different geometrical properties can yield contrary qualities.

The westerly diurnal revolution and the easterly ecliptical give the appearance of being opposite. However, the plane of action of the latter is inclined with respect to the former (by about 23.5 degrees of arc). So they do not move in contrary directions at once. Their resultant movement is spiral.[61] Furthermore, the excursions of the planets from a truly circular path, including those by the moon, do not suggest a contrary action. They take place in latitude and in depth, not in longitude. That is, such deviations are in directions other than the direction followed by the planets in their normal circular orbit. Thus, they too can be regarded as a kind of spiralling:

> How do we admit an opposite sense to the circular movement? The cause of spiralling is not that each planet is carried in two opposing directions (*phoras*) but that each is moved along the oblique circle [i.e. the ecliptic] with respect to the equinoctial (*pros ton isêmerinon*) . . . for these two movements produce, in conjunction with the revolution of the universe, the helix. For the spiral is the figure best suited to the planets. (Proclus, *In Tim.*, 3.78.31–79.15)
>
> As has been said before, the circle applies solely to the sphere of the fixed stars, but the straight line (*eutheia*) to the generation, whereas the spiral is to the planets, combining both the curve (*periphereias*) and the straight line; thus the movements in latitude and depth are the paradigms of and the causes proximate (*prosecheis*) to the movements down-here, that is the up and down and the sideways. (Proclus, *In Tim.*, 3.80.7–12)

How can they be contrariant?

The retrograde phase itself of the five 'wanderers' (*planêtes*) proper, Venus, Mercury, Mars, Jupiter and Saturn, could not have been explained away as results of combined actions inclined to each other. The planets proper backtrack in longitude and stray in latitude. It is here that Proclus comes to accept that contrariety must exist in the heavens.

However, such contrariety exists in a 'causal' mode, in principle. If the heavens are to be metaphysical causes of things on earth, they must anticipate their behaviour. According to Neo-Platonic metaphysics, a cause embraces its effects before they proceed away from it.

> Therefore it should not be surprising that there is some kind of opposition in some of the movements in heaven . . . these are not the contraries which conflict with, and are destructive of, each other – for these pertain to the enmattered and divided entities (*enyla kai merista*) – but these are simply the efficient causes (*poiêtika*) of contrarieties . . . And the figure of the spiral is not an empty coincidence (*symptôma*) but it fills appropriately the intermedium between the bodies which move rectilinearly and those which move circularly. (Proclus, *In Tim.*, 3.79.28–80.6)

The last challenge which he faces is how to explain that the same body can be subject to two contrary forms. His solution relies on the Platonic theory of Forms and, yet again, on the hierarchical system of explanation. Contrary forms can coexist in the heavens without mutual interference and negation because only the sublunary mass-matter does not have the capacity to receive them simultaneously. The heavens are 'immaterial' by comparison to earth. If contrary Forms can coexist in the intelligible levels, as principles, what stops them from doing the same 'down-here'? It must be the different grades of Matter. In what respect are the grades of Matter different? They are different in degree of power. So, what started as a problem with the nature of perfect objects is turned into a virtue. The planets are felicitous images of incorporeal, intelligible reality, which comprehends all Forms, including contraries, as a simultaneous whole. Likewise, the planets can contain contrary forms without breaking apart.

> For it is requisite that the cause of complexity (*poikilias*) and the principles of contrariety (*enantiôseôs archas*) are anticipated (*proeilêphthai*) in the heavens; or else how could the heaven comprehend (*periexei*) the generation, and how could it guide the transformation of the sublunary Elements, if it did not contain in itself (*periechôn en heautôi*) the principle of contrariety? Because the heaven is immaterial as far as is possible among the sensibles, and does not contradict (*ou machetai*) the contrarieties which are in it (*en autôi*), nor is it at variance (*oude stasiazei*) with either, but coexists, (*synyparchei*) with both. And the same star is moved with two

> circulations and does not have the one in itself (*kath' hauto*) and the other by accident (*kata symbebêkos*), for if I must voice my opinion, it has both in itself . . .
>
> Therefore, because heaven is immaterial – by this I mean in relation to the matter (*hylên*) which is unstable (*anedraston*), has a bastard beauty and is deformity itself – heaven is able to embrace contrary movements; for when the real-beings which are contrary are outside (*exô*) this matter [*hylês tautês*: gross matter] which embraces nothing, they are concurrent (*syndroma*) and united with each other, but when they are within this matter (*en têi hylêi*), they fight each other because this matter cannot admit the presence of both forms because of this matter's lack of power (*astheneian*). (Proclus, *In Tim.*, 3.122.6–24)

> Pure contraries without matter will not injure each other, but both will remain in their specific purity. Contraries in matter, therefore, are quite different from immaterial contraries; the former strike and injure each other, the latter are intangible and pure and mingle as breaths each with the other (*sympneonta allêlois*) . . .
>
> The contraries in matter are destructive and displace each other (*existatai allêlois*) out of their common receptacle (*koinês hypodochês*), and what is occupied by the one cannot be participated by the other . . . A white object does not become black except by the destruction of the white, nor is the cold made warm except by the disappearance of heat. (Proclus, *In Parm.*, 739.31–740.17)

5. CHALLENGED BY THE EARTH

What about the earth? Does it rotate like a celestial body or not? How does it relate to the heavens? Moreover, can we ever divorce ourselves from our present knowledge and look at past thinkers without praising them or blaming them according to the extent to which they came nearer or further from our views?

Plato was among the first to start the debate. In one passage in the *Timaeus* (40b9–c3), which is burdened by Pythagorean influence, he refers to the earth by a term which, if spelled one way, means 'rolling around' (*eillomenên*) the axis of the universe, but if spelled slightly differently merely means 'packed' or 'conglobed' (*illomenên*) around the axis: that is, it has no connotation of movement. To make things even more difficult, elsewhere he refers to the earth as an 'instrument of time', an appellation usually reserved for the celestial bodies. Did Plato believe later in life that the earth moves just like a heavenly body? Some thought that he did. Their assertion has its roots in the cosmological doctrines of the mysterious Pythagoreans. They alone believed in an earth revolving with the stars around a central fire, the cosmic 'hearth' (however, that fire does not seem to be the sun itself, but the source of the sun).

Our chief source for these doctrines, as for the ancient Greeks themselves, is Aristotle's treatise *On the Heavens* (2.13). It is ironic, for the very same work contains the most forceful and perspicacious rejection of earth's motion on the basis of the laws of physics. Aristotle's criticism was so good and thorough that it ruled out any physical motion for the earth in European science for nearly 2,000 years, until the time of Galileo and Kepler.

But that did not preclude metaphysical speculation on the close affinity of the earth and the stars and the enthronement of the sun as the centre of power in the cosmos. The Pythagorising Platonists always looked to the sun as the source of the vital light that sustains the world as one living body. Religious beliefs in the sun aided the philosophical speculations, particularly widespread belief in the Graeco-Roman Apollo and in the Chaldaean and imperial Mithras. Proclus plays an important role in the development of metaphysical ideas on the sun and the earth. In this respect only, it is right that Kepler, the first to make the sun the physical and the metaphysical centre with his Platonic-Pythagorean mathematics and physics, credits him as a precursor of heliocentricity. As I shall outline in this and the next section, we owe the rise of heliocentric cosmology not to physics, but to mathematics and metaphysics.

The problems of the earth as a cosmic body were two. Whether the earth moves around the sun, or not, is the issue of heliocentricity, or geocentricity. Whether the earth moves on its own axis, or stands still, is the issue of diurnal motion for the stars.

Before Aristotle's argument in favour of an unmoved earth at the centre of the universe dominated Greek cosmologists, some had suggested that the earth moves but the celestial dome stays stationary. Heraklides of Pontus, who had attended the lectures of Plato and Aristotle, and Aristarchus of Samos, a mathematician who had been a pupil at Aristotle's School, based their idea of a moving earth on contemporary estimates of the distance of the fixed stars, which put them at near-infinity. This made it reasonable to have the sphere of the fixed stars unmoved and have the much smaller earth rotating at the fast rate of one period in a day and night. Nevertheless, their views did not survive. They left the problems of the earth's physical spinning unresolved, and they could not account for the celestial phenomena as thoroughly as the existing models. Only Aristarchus achieved fame posthumously, when 1,800 years later Copernicus made him the chief precursor of his new astronomy.

Nearly eight centuries after the deaths of Heraklides and Aristarchus, Proclus' attitude to the claims of the earth's axial rotation is explicit: they were wrong. The earth stays stationary, and the fixed stars move. The Element of Earth keeps earth physically inert. Earth is unlike the other three Elements, particularly Fire, which always move by nature and transform into one another. Heaven moves but earth stands still because of the different Element which predominates in the respective region.[62]

But this is far from the end of the story. For Proclus, entities are composed of many levels of being. Cosmic earth is more than a physical body. It is a whole being with the same bundle of levels of being as the other cosmic bodies, the celestial:

> And if the ultimate truth (*to alêthestaton*) is to be said regarding the earth, she is a living being (*zôon*) composed of a divine soul and a living body . . . for there is in her an immaterial and separable intellect which maintains (*synechôn*) in the same position this bulk body, and a divine soul which turns about this intellect and an aethereal body [*sôma aitherion*: the astral vehicle] immediately attached to the soul and lastly is this visible bulk body (*phainomenos ogkos*). (Proclus, *In Tim.*, 3.135.14–20)

Like the celestial bodies, and especially the sun and the moon, the earth is an 'instrument of time', a cosmic clock.[63] The opacity of its Earth Element, which it shares with the stars, generates the shadow of night, and is responsible for the cycle of night and day. This is how earth is an 'instrument of time', as Plato said in the *Timaeus*: not actively, as a moving body (like the planets and the stars), but passively, as the caster of shadow.

> Evidently, the earth creates (*poiêtikê*) the night; for she produces a cone and this is her shadow (*skia*), and her size and figure give magnitude and shape to the shadow of night. But how is the earth the creator of day? Does she not produce both day and night together? . . .
>
> The earth is therefore the creator (*dêmiourgos*) of both of these, producing them both in conjunction with the sun (*synapotelousa tôi hêliôi*); except that the sun is more the cause of day but the earth is the cause of night. (Proclus, *In Tim.*, 3.139.23–140.2)

With respect to its metaphysical self, the earth is a cosmic body exactly like the planets. As we have seen in the section on the structure of the celestial bodies, on Proclus' Elements and on similarity and sympathy, body is imbued with power and force. In a truly remarkable statement unheard of before in Greek cosmology (save by the Pythagoreans), Proclus declares that the earth is indeed a kind of star:

> If these are true, we must also call the earth a kind of star (*tên gên astron ti rhêteon*), with respect not to her visible bulk but to her aethereal vehicle, which is star-like (*astroeides*). (Proclus, *In Tim.*, 3.308.15–17)

Proclus' views regarding earth are so unambiguous that there is no doubt that he saw earth as no different in essence from the celestial bodies, except for the physics of its tangible body. In another equally remarkable passage, he expresses the suggestion that, if it had not been for the restrictions imposed by physics, earth would certainly revolve exactly like the other celestial bodies:

> Every simple body which is in its own proper place either remains stationary or is moved in a circle in order that it may never leave (*mêde apoleipê*) its proper place [see Proclus' theory of motion of the Elements] . . . and therefore the celestial body, by being fiery when it moves, moves necessarily in a circle; accordingly the earth likewise, which does not leave the middle of the universe, if she were moved (*eiper ekineito*) she would move circularly (*kyklôi an ekinêthe*). (Proclus, *In Tim.*, 2.11.28–12.2)

6. THE COSMIC HEART AND THE NAVEL

A curious and little-known fact about Proclus' order of the seven planets is that he admits *two*, not one. He accepts both the Platonic arrangement, which placed the sun second distant from earth, and the 'Chaldaean' and Ptolemaic, which placed it in the middle of the seven.[64] Even to a careful reader this appears as an inconsistency, typical of the alleged fudging of Neo-Platonists. However, far from being so, it hides the key to an understanding of the history of heliocentric cosmology. Put in its rightful context, it underlines the fact that the Greeks never limited themselves to one order of the planets at a time, and that they were happy to speculate on more than one centre for the universe.

Plato's order, which is Aristotle's too, betrayed to some degree the early, cosmographical function of such arrangements. They were intended to group the celestial bodies in identifiable classes rather than place them in order of actual distance from earth. Therefore it is not accidental that

Plato and Aristotle placed the moon and the sun as a pair, in the first and second order from earth. They are the celestial 'luminaries' which are distinct from the rest.[65] Next come the five proper 'wanderers': Venus, Mercury, Mars, Jupiter and Saturn. Beyond them are the fixed stars, again as a group.

This order was by no means universally accepted. According to Theon of Smyrna (early second century AD), some kept to the Platonic-Aristotelian order exactly, while others placed Mercury next to the sun, as opposed to Venus. Others displaced the sun from the second orbit and put it in the fourth. Theon's evidence, as we shall see, is vital to the issue of geocentricity and heliocentricity in the second century AD. However, his chief work, *On the Mathematics useful for the reading of Plato*, written twenty or thirty years before Ptolemy's famous 'Almagest' (= Arabic title; in Greek: *Syntaxis*), has received scant attention.[66]

On top of the arguments on the positioning of the sun, the moon and the five planets loomed the debate of heliocentricity. Although the claim that Heraklides had proposed some sort of geo-heliocentric system similar to that of Tycho Brahe (Kepler's predecessor in the seventeenth century) has now been disproved,[67] Aristarchus' was certainly heliocentric. The astronomical measurements of Aristarchus, and later of the famous Archimedes (one of our main sources for Aristarchus), yielded cosmic dimensions for the orbit of the sun in relation to the moon's which were far greater than had been thought hitherto.[68] This may have been one of the reasons why Ptolemy finally decided on the order with the sun in the middle of the seven planets. Actually he argued that since Venus, Mercury and the sun always appear to move near each other, it would be reasonable to group them together. With Ptolemy's seal of authority, the order of the moon, Mercury, Venus, the sun, Mars, Jupiter and Saturn became the standard.

Astronomers and physicists did not have a monopoly on how the cosmos is arranged and functions. It was not simply a subject for empirical science. It was primarily a question of what is the grand scheme of things. Without strong visual aids, empirical science was limited. Further, as we have seen in the previous section on problems with the stars and the precession, empirical data require a theory to make them understandable. Speculation on what is the order of the cosmos was open to other theorists: theologians and, of course, philosophers.

Religion had its own set of beliefs which was applied to the dedication of days to gods. So, in addition to the astronomical orders of the planets, there were the calendrical ones. Most of them had an astrological pedigree (hororary astrology). Some seven-day calendars still reflect these: Sunday (sun), Monday (moon), Tuesday (Mars), Wednesday (Mercury), Thursday (Jupiter), Friday (Venus) and Saturday (Saturn). Furthermore, religion often sanctified one god above all others. In Late Antiquity, this was invariably the sun, *Sol* or *Helios*. The traditional sun-god was Apollo. But one other came from the Chaldaeans and the neo-Zoroastrians of the Sassanid Persian Empire. Mithras came with the returning Roman soldiers. Merged into one, Apollo-Mithras spread to the Romans, whence he became identified with the emperor himself. 'Sun the Unconquered' (*Sol Invictus*) was initially the faith of the Constantine the Great in the fourth century, who later upheld the Christ of a new, victorious Church, whose all-shining emblem declared: 'By this Conquer' (*en toutôi nika*).

Philosophy, however, played the most crucial role in the rise of the heliocentric system. Pythagoreans, Platonists and Stoics each in turn elevated the sun from a celestial luminary to the 'heart of the universe' (*kardia tou pantos*), 'king of the visible universe', and the 'fiery artificer' whose fire breathes life into the world. Of these themes, the most persistent is 'heart of the universe'.

According to Theon of Smyrna, it was the phrase used by Neo-Pythagoreans, who maintained the sun in the middle of the seven planets,[69] and was linked to Pythagorean cosmic harmonies. Theon's *Mathematics* embraces all the Pythagorean number theories, including those on the One. Indeed, it is very similar to the *Introduction to Arithmetic*, a contemporary work written by a known Neo-Pythagorean, Nicomachus, who became part of the Neo-Platonic mathematical syllabus. Proclus in particular believed that Nicomachus' *psychê* possessed him. Theon's references to the Platonic and the Pythagorean arrangements suggest that he liked both. He is less coy about his exposition of the current views on the sun and the earth as centres of the universe. As expected, there is a blend of Platonic and Stoic concepts with Neo-Pythagorean. The sun is the centre of the life-force and the earth the centre of the physical body of the world. The sun is the cosmic 'heart' and the earth the cosmic 'navel'.

> The truest position and order is this, so that in the world, both as a cosmos and a living being, the best place is that which imparts life. The sun, being essentially hot, is, so to say, the heart of the universe (*kardia tou pantos*) because of its movement, its size and the common circulation of the surrounding stars. For in living things the centre of their real essence (*meson tou pragmatos*), that of the living being in its capacity as being alive, is different from the centre of the bulk-body (*allo tou megethous*). For example, for us

> who are, as we have said, both human and alive, the centre of life is the heart which is always warm and always moving and, because of this, the source of all faculties of the *psychê*, the cause of life and of all movement from one place to another . . . The centre of our bulk body is different, it is situated towards the navel (*omphalon*). Likewise if we consider the largest . . . like the smallest . . . the centre of the body of all the cosmos will be the cold and unmoved earth, but the centre of the world, considering it as a cosmos and a living being, will be the sun which in some way is the heart of the universe. (Theon of Smyrna, *Mathematics*, ch. 33, 187.13–188.5 (Hiller)

Proclus follows essentially the same line (there is no mention of Theon). The order which treats the sun without favour, that with the sun next to the moon, is true insofar as it pertains to the physical aspect of the planets. The order which treats the sun as special, that with the sun in the midst, is true insofar as it reveals the metaphysical circulation of the planets around the sun.

He defends the Platonic order in two ways, one positive, one negative. First he points out that the sun and the moon should be adjacent because they are both the 'luminaries' of the heavens, and the moon's phases are due to the sun. Both influence with their light the physical realm of generation, so that the sun is like a 'father' to it and the moon like a 'mother'. Besides, according to Proclus, the first to propose such a system before Plato was one of the 'physicists', the Presocratic Anaxagoras. A near-contemporary of Proclus, the Latin Macrobius (410s), had defended the Platonic order on similar grounds.[70] Another contemporary (420s), Martianus Capella, a Latin writer practising law at Carthage, also promulgated a heliocentric order, partly on metaphysical and partly on astronomical grounds. Two planets, Venus and Mercury, circulate as satellites to the sun. This was substantially the observation also of a Latin Platonic commentator on the *Timaeus*, Calcidius (fourth century AD, but there are problems with dating).

Secondly, Proclus undermines the opposition. Ptolemy had adopted the order which, after the moon, has Mercury and Venus before the sun. He believed that this was the actual order of the planets according to their distance from earth, although his astronomical evidence was less than conclusive.[71] Proclus pounces on this with the confidence of someone who is in command of the subject and knows the weaknesses of the challenger. He points out that the astronomical method of observation used by Ptolemy is useless in deciding whether Mercury and Venus are nearer to, or further from, the earth than the sun. Ptolemy had admitted that since Venus and Mercury exhibit no significant parallax, we cannot estimate their linear distances properly with the parallactic instrument.[72] Proclus proceeds to question the integrity of Ptolemy's calculation to the radii of the planetary orbits, which put Mercury and Venus between the moon and the sun. For Proclus, Ptolemy fudged the proportions to make them fit.[73] The true, directly-measured data are those of the moon and the sun only. The astronomical method, by parallax, is useless for establishing the distances of Mercury and Venus, because the sun's light is too bright to focus on them when the measurements have to be made. Proclus summarises Ptolemy's arguments as more 'conjecture' (*pithanon*) 'than necessary' (*ê anagkaion*), and 'not proven by demonstration' (*ouk apodeixeôn*).[74]

However, Proclus' attitude changes when he discusses the very same order, that is, with the sun in the fourth position in the midst of the planets, in an astro-theological context. The 'Chaldaeans' and theurgists put the sun in such a special place, with Mercury and Venus as its attendant 'satellites', because this is the place proper to the 'king of the visible universe'. Around the sun as the centre of divine power and light, the planets 'circulate as a chorus' and 'escort it as satellites'.[75]

> But if you listen to the Chaldaean theurgists who say that God put the sun in the middle of the seven and suspended from it the other six zones and gods (the celestial spheres and bodies) . . . and that He established the sun's light in the place of the heart (*kradiês topôi*) . . . the sun is arranged in the middle of the seven planets, just as the theurgical oracles and the gods, say, with Mercury above the moon, observe that this order is appropriate to the protectors [*prostatais*: the planets as divine entities] of the realm of generation as a whole. For the sun is escorted by satellites (*doryphoreitai*), all the cosmic governors [*kosmokratorôn*: astrological term for the planets] in its capacity as the king of everything visible (*tôn horatôn pantôn basileus*) who imitates the powers of the Creator through the light rays; it gives birth (*gennôn*), fills with life and renews (*ananeazôn*) the generated things. Above it are the three planets . . . which exhibit active creating with respect to the cycle of generation; Saturn combines, Mars separates and Jupiter brings the other two in symmetry. Below are the other three. (Proclus, *In Rep.*, 2.220.11–221.10)

> For this reason, when the sun appeared and filled the others (the planets) with wonder, they wished to circulate around it as in a

> chorus (*peri ekeinon choreuein*) and to be filled with light. And this cosmos is beautiful and solar-like (*hêlioeidês*). (Proclus, *Plat. Theol.*, 6 ch. 12 p. 380 (Portus))

So Proclus distinguishes once again the corporeal from the incorporeal, the inert from the dynamic. As in his theories of the Elements and of space, so in his theory of the celestial bodies he examines the levels of his composite entities 'in a manner appropriate to each'. The earth may be the centre of the bodily universe, but the sun must be the centre of power. This is the sun in all its glory as the visible representative of light-divinity, from the One to God the Creator in Intellect and to Soul:

> And this in fact is said by the theologians [*theologoi*: the 'Chaldaean' or the Orphic] when they talk about the 'firmaments above the world' (*hyperkosmiôn stereômatôn*). On this account, therefore, it seems to me that Plato [*Tim.* 39b2–c1] gave a twofold constitution to the sun, the one in common (*homou*) with the seven cosmic governors, when he discussed the formation of their bodies and the positioning in their orbits, but the other with respect to the kindling of light (*phôtos exapsin*), according to which he gave a share of the supracosmic power to it. For the bulk body of the sun taken by itself (*kath' heauton ton ogkon*) is one thing, but its principal property (*hêgemonikês idiotêtos*) is another, due to which the sun is called King of the visible universe (*basileus tou horatou pantos*) and stands analogous to the one source of Good (*mian pêgên agathôn*). (Proclus, *In Tim.*, 3.82.19–26)

Despite the merits that the 'Chaldaean' (and Ptolemaic) order of the planets could offer, Proclus harboured the desire that the Platonic could match the heliocentric emphasis. He notes that if we were to take the four sublunary spheres of the Elements into consideration, then, although the sun may not be in the physical centre of the seven planets, it is in the middle of the seven planets *plus* the four sublunary Elements. If we add the four sublunary Elements to the seven planets, we get eleven ranks. In Plato's scheme, the sun is second from the moon. Thus in the expanded scheme of eleven orders, the sun belongs to the sixth (four sublunary Elements plus the moon). That is, the sun is in the middle of the total. Proclus puts, in effect, the sun in an even stronger heliocentric position. It would not just be at the metaphysical centre of the planets but at the centre of a system composed of the planets and earth: a solar system.

> But if you want to survey the sun's middle position (*mesotêta tên heliou*) in another way, consider that there are two groups of five on

> either side of it. Below is the moon and the fourfold tetractys of the Elements . . . whereas above it are the governors of all generation, which all have in common that which neither the sun nor the moon have, viz. the advances, stoppings and retrogradations . . . but the sun is entirely extended in the middle position. (Proclus, *In Tim.*, 3.67.27–68.10)

The Neo-Platonic-Pythagorean heliocentric system, with the sun as the king of the visible universe residing at the heart of the cosmos, contributed to the Renaissance and the seventeenth century, the time of the birth of modern science. Copernicus was the first astronomer to revive Greek ideas about the sun at the centre of the world. His commitment appeared half-hearted, mainly because the dominant physics of his time (the fifteenth century) was still that of Aristotle. Aristotle's science was already being criticised by Italians, French, Germans, English and Dutch. It had served its purpose of bringing knowledge to Western Europe. The pioneers of the new science looked for critical support. They encountered the Neo-Platonists in their capacity as commentators on Aristotle, or on Plato. They too had rejected Aristotelian physics. The Neo-Platonists saw a unified world of light, life and power framed in geometrical space. This was the turning point for Renaissance science, art, religion and politics.

Heliocentric ideas began to emerge into cosmotheology and physics. Copernicus' model was later supported by Galileo's and Kepler's observations. By the seventeenth century, Europe was awash with the new thoughts and sentiments aroused by heliocentrism. This much we can glean even from the publication of William Harvey's great discovery of the circulation of the blood. In the dedicatory note to his sovereign, Charles I (later beheaded by the Parliamentarians after the English Civil War), he addressed him as the 'heart' and the 'sun' of the nation:

> The heart of animals is the foundation of their life, the sovereign within them, the sun of their microcosm, that upon which all growth depends, from which all power proceeds. The King, in like manner, is the foundation of his kingdom, the sun of the world around him, the heart of the republic . . .[76]

The astronomer who brought Neo-Platonic heliocentrism to the realm of physical reality was Kepler. He was the first to propose a truly heliocentric cosmology in which the sun is not just a geometrical centre (as in Copernicus) but also the centre of force of our solar system. He made new and radical discoveries about the planets' elliptical orbits and formulated the laws of celestial motion, which after Newton's grand synthesis became part of modern astronomy. He saw his work as the discovery of God's secret design of the universe, and explained it all with a Platonic–Pythagorean philosophy and mathematics which spurned muddled occultism (Fludd). This he did in the firm belief that the sun is God's representative.

Kepler hailed Proclus as a prophet of the sun's central place in the cosmos. He especially kept Proclus' theory of mathematics as the pillar of demonstrative knowledge. Mathematics provides the best model of reality, and exemplifies the regulative nature of universal laws. He also subscribed to Neo-Platonic light-metaphysics. Light is the essence of cosmic space and of reality in general. Like Proclus, he envisaged the sun at the centre of power of the system composed of the earth and planets. Unlike Proclus, he discovered that the planets' stable elliptical orbits enabled him to have a cosmology in which physical reality fully lives up to the metaphysical ideal. In effect, Kepler liberated Neo-Platonic cosmology from the constraints of ancient Greek physics. Thus he resolved the challenge of reality. This challenge Proclus persistently refused to disregard, despite the instrumentalist solutions of the astronomers, and tried hard to account for within his metaphysical system of explanation.

Kepler also looked for a physical mechanism. He speculated on magnetism as the force responsible for celestial motion. However, it was Newton who succeeded. For his comprehensive account, he relied on formal mathematics. In his own search for the secret workings of God in Nature, he postulated gravity, a 'hidden' action at a distance, for the universal force immanent in mass. In other words, he demonstrated that the centre of power, the 'heart', and the centre of mass, the 'navel', are one. But the philosophical questions about mind and reality remain.

NOTES

1. P. Duhem, *Aim and Structure of Physical Theory* (English translation, Atheneum, 1962).
2. *Theologia*. cf. Plato. *Rep.* 379a, for Aristotle the 'First' philosophy dealing with unchanging entities: *Metaph.* 1026a18ff. Both Plato, *Laws* 820ff., 885, 967–8, and Aristotle, *Phys.* 196a, *Nic. Ethic.* 1141a, link belief in God with the contemplation of the heavens. For studies, see G. E. R. Lloyd. *Polarity and Analogy* (Cambridge, 1966), pp. 41–2, 187–8, 91–6, 309–19, 259–60; G. Vlastos, 'Theology and philosophy in early Greek thought', *Classical Quarterly* 2 (1952). 97–123. *Ouranos* is used on many occasions interchangeably as cosmos-order, for example in Plato, *Tim.* 28b, *Phaedr.* 247, *Polit.* 269d; Aristotle, *Cael.* 278. *Entautha*: Aristotle, *Metaph.* 990b; *ekei* Plato, *Phaedo* 61e, 64a for the otherworld; for the intelligibles more extensively in Plotinus, *Enn.* 2.9.4; 2.4.5; 1.2.7; Proclus, *In Tim.*, 3.80, 111–12, 128–31.
3. Philosophical causes of change, distinguished from the more physical 'astrological' effects of the sun and the moon (mainly) on the seasons: see for example Aristotle, *Gen. Cor.*, 2.10, 336b; Ptolemy, *Tetrabiblos* 1.1 and 2. See also R. W. Sharples, 'Alexander of Aphrodisias on divine providence: two problems', *Classical Quarterly* 32.1 (1982), especially pp. 200–7.

4. Satellite theory was noted by Thomas Taylor, and copious notes on it can be found in his translation of Proclus' *Commentary on the Timaeus*, and of Plato's *Timaeus*: see *The Cratylus. Phaedo. Parmenides. Timaeus and Critias of Plato* (1793), pp. 262–4, 283; *The Commentaries of Proclus on the Timaeus of Plato in five books* (1820), 2, pp. 280–1, 299. On satellites and invisible celestial bodies: also R. K. G. Temple, *The Sirius Mystery* (London, 1976), appx 1, on Proclus.
5. For the 'bodyguard' preserving principal causes, see Proclus, *In Tim.*, 1.39–40, 3.149.24–8; *In Rep.*. 1.90–2. They are obvious influences from Plato. *Phaedrus* myth (247–52); the attendants of the celestial gods: Proclus, *In Tim.*, 3.149.24–8. In addition, there are striking similarities with the Late Roman 'protectors of the emperor'. The *protectores* were the elite officer cadets, who doubled as bodyguards. They received their commission in a ceremony during which they personally 'adored the sacred purple'.
6. 'Satellite' is also an astrological term: the planets flanking or near the sun, cf. Ptolemy, *Tetrabiblos* 3.4. The 'satelliting' of the sun by Mercury and Venus was widely known; Plato described it, *Tim.* 40cd, with the terms *choreias*, *parabolas*, *epanakyklôseis*. See A. E. Taylor, *Commentary on Tim.*, pp. 241–3.
7. S. Sambursky, *The Physical World of the Greeks* (1956). p. 67; J. L. E. Dreyer, *History of Planetary Systems* (1953), p. 71; reference to Plato, *Tim.* 40b.
8. Proclus, *In Tim.*, 2.6; cf. Philoponus, *Contra Proclum*, 520–1. As has been pointed out to me by R. W. Sharples, these references are also important to the issue of whether Theophrastus abandoned the Aristotelian Aether or not.
9. Self-motion in Plato: cf. *Laws*. X 894c, 866–97; *Tim.* 43; soul essentially 'self-motion': *Phaedo* 78b–79b, *Phaedr.* 245–6; cf. Form of Motion, *Sophist* 254. Proclus arranges hierarchically 'self-motion', 'moved-by-another': for example, *El. Th.*, props 14, 20.
10. Plato. *Tim.* 31b: cf. *Laws*, 896. See also A. E. Taylor, op. cit., pp. 88–90, 93–4. Incorporeal is active, *poiein*, whereas the corporeal is passive, *paschein*: Proclus, *El. Th.*, prop. 80. It has antecedents in Stoicism. According to Proclus, the incorporeal does not remain entirely unaffected by the corporeal – perhaps it relates to the 'shaking' of *Philebus* 33d.
11. Not necessarily a Proclean demarcation; however, cf. *In Tim.*, 3.59.18ff. and *El. Th.*, props 14–16.
12. William Gilbert, *On the Magnet*, ed. D. J. Price (1958).
13. Proclus, for example *El. Th.*, props 120–2.
14. Cf. *El. Th.*, props 42–4, 82.
15. *El. Th.*, prop. 121.
16. *In Tim.*, 3.57.17–20.
17. Proclus, *Plat. Theol.*, 1.91.27–92.1. To this should be added: 'everlasting' (*aidios*). But it can be derived from 'unchangeable'; cf: Aristotle, *Cael.* 1.3 and 2.1.
18. This would not have been the position of any Platonist proper, for in *Tim.* 40a it is stated clearly that the celestial bodies are made 'for the most part of Fire', and earlier, 32d, that the cosmos was fashioned from all the four Elements. That the celestial bodies are made of Fire (only) corresponds to the Stoic position. Middle Platonists such as Plutarch and Apuleius assimilated the Stoic pure fire into the Aristotelian aether in a four-Element scheme; aether became a form of fire different from the sublunary (Dillon, *Middle Platonists*. pp. 170, 315). Plotinus' discussion 'On the Heavens', *Enn.* 2.1, especially 6, shows that the Platonic position is better because it can account for the solidity of the heavenly bodies.
19. In the Platonic *Epinomis* 981de, although Proclus does not mention it. That the celestial realm consists of the four Elements like the sublunary recurs often in Proclus; cf. Philoponus, *Contra Proclum*, 523.52; Plotinus, *Enn.* 2.1. As A. E. Taylor underlines, op. cit., pp. 88–9, Greek physics before Aristotle did not hold two radically different kinds of matter, one celestial and one sublunary, and Aristotle's physics decidedly arrested it.
20. *In Tim.*, 2.43.30; Diehl has *synyphasmenon*, meaning 'woven together', perhaps as in *Tim.* 78b; however, I prefer the Q text (cod. Paris. 666) term, because it seems to accord better with the hierarchical cosmological content of the passage; it has also the meaning 'established together'.
21. Cf. Simplicius, *In Phys* 613.15–17; Plotinus, *Enn.* 2.1.7–8. Impassivity is less important to the heavenly realm itself since there is no contact between bodies anyway; it ensures mainly impassivity from action by sublunaries.
22. Simplicius and Philoponus on the heavens containing the 'summits' of four Elements: see P. Hoffmann, 'Simplicius' Polemics', and Sorabji, 'John Philoponus' (especially on rejection of the fifth element), in *Philoponus and the Rejection of Aristotelian Science*, ed. Sorabji. But neither article acknowledges the debt to Proclus.
23. Dillon, *Middle Platonists*, p. 49.

24. Plato, *Rep.* VII, especially 529–30.
25. Elliptical shapes generated by epicycles: O. Pedersen and M. Pihl, *Early Physics and Astronomy* (London, 1974), fig. 7.19, p. 96.
26. Studies on ancient astronomy include P. Duhem, *Le Système du Monde* (1954), vol. 2; T. Heath, *Aristarchus of Samos* (1913; repr. 1981); J. L. E. Dreyer, *History of Planetary Systems* (1954); O. Neugebauer, *A History of Ancient Astronomy* (1975). For the distinction between physical and mathematical astronomy, see R. Palter, 'An approach to the history of early astronomy', *Studies in the History and Philosophy of Science* 1 (1970), 93–133. For the Eudoxan–Aristotelian scheme, L. Wright, 'The astronomy of Eudoxus: Geometry or Physics', *Studies in the History and Philosophy of Science* 4 (1973), 165–72; on the possible relation with Plato's *Timaeus*, G. E. L. Owen, 'The Place of the *Timaeus* in Plato's Dialogues' (1953), reprinted in *Studies in Plato's Metaphysics*, ed. R. E. Allen, especially pp. 325–6; cf. J. M. Rist, 'The order of the later Dialogues of Plato', *Phoenix* 14 (1960), 214–60 (concludes there is no relation). On Ptolemy's *Planetary Hypotheses*: B. Goldstein, 'The Arabic version of Ptolemy's *Planetary Hypotheses*', *Transactions of the American Philosophical Society* 57 (1967), 1–55. The study particularly useful for this section is by E. J. Aiton, 'Celestial spheres and circles', *History of Science* 19 (1981), 75–114 (Proclus and the nested spheres, pp. 84–5).
27. Proclus' doubts on the physical reality of Ptolemy's mathematical system: *Hyp. Astr.*, op. cit., 238 (ch. 7, par. 55); see also Sambursky, pp. 146–9; S. Sambursky (ed.), *Physical Thought from the Pre-Socratics to the Quantum Physicists: An Anthology*, no. 117, pp. 112–4. A. Segonds, 'Proclus: Astronomie et Philosophie', in *Proclus lecteur*, ed. Saffrey and Pépin, pp. 319–34. Proclus on the construction of the spherical, armillary astrolabe: *Hyp. Astr.*, ch. 6.
28. Plato, *Rep.* X 616f. On Plato's 'whorls', T. Heath, *Aristarchus*, pp. 148–9, 153–7; on their similarity with the Parmenidean 'bands', 68–9; on the nested spheres, A. J. Aiton, op. cit.
29. E. Grant, 'Cosmology', in *Science and the Middle Ages*, ed. D. C. Linberg, especially pp. 272–83, 291–3, with a table on p. 292 showing the dimensions of the universe based on the nested spheres.
30. The formula-phrase stems from Aristarchus of Samos and his estimates for his heliocentric system, intended as an answer to the lack of stellar parallax: Aristarchus uses it to describe also the dimensions of the lunar orbit around the earth with respect to the stars, in addition to that of the earth around the sun (see T. Heath, op. cit., pp. 302, 308–10, 353, 410). The latter yields stellar parallaxes: the first was measured by Bessel and Henderson in 1838 and by Herschel in the 1850s. Archimedes seems to be the one who promulgated Aristarchus' measurements and system, which through him spread to the rest of the Greek astronomers.
31. Proclus, *In Rep.*, 2.218.
32. *In Rep.*, 2.219.23–222. A. E. Taylor, op. cit., pp. 161–2 n. 2, praises Proclus for being a good Platonist in not wanting to allow the perigee and apogee as generated by eccentrics and epicycles. The epicyclic parameters given by Proclus, *In Rep.*, 2.222, coincide with those in Ptolemy's *Syntaxis*, except those of the moon: they are from Ptolemy's *Canobic Inscriptions*: see also O. Neugebauer, op. cit., p. 903, and idem, *The Exact Sciences in Antiquity* (1957), p. 195, n. 1.
33. Cf. Proclus, *In Rep.*, 2.215.17–19.
34. A non-Biblical origin for the medieval notion of aqueous spheres below the empyrean. For Gregory of Nyssa, Heavenly waters are above fire (*Apologia Hex.*, 84). Cf. E. Grant, 'Cosmology', in *Science in the Middle Ages*, ed. D. C. Lindberg, pp. 275–8.
35. *In Tim.*, 3.133.6f. He refers to the term 'zones' (of the Chaldaean cosmology). They coincide with the 'spheres'.
36. *In Rep.*, 2.215.24–24–216.4. Cf. Plato, *Tim.* 36c7–d1, where the Same circle is said to have *kratos*, sovereignty or predominance (over the Other). See also A. E. Taylor, op. cit., pp. 152 n. 1 and 158 n. 1.
37. Cf. Kepler, *Mysterium Cosmographicum* 20, *Astronomia Nova* 45, *Epitome of Copernican Astronomy*, IV 3. Kepler chose to make the soul-like force resident in the sun, as the 'heart' of the planetary system.
38. Plato did not necessarily have the star-souls resident in the celestial bodies; some of the options can be found in *Laws* X 898–9, resident in the celestial body, or being outside it and acting either by corporeal contact (the souls possess their own fiery or airy body) or by incorporeal power. The same ambivalence is discerned even in the *Epinomis* (probably because the author was also the editor of the *Laws*), 982–3. Another interpretation is that the options of an externally-acting soul are presented in order to exemplify that of an internally-resident soul (cf. G. Vlastos, *Plato's Universe*, especially pp. 31–52). Aristotle rejected independent motion for the celestial bodies. On the complexity of the issue, see R. W. Sharples, 'Alexander of Aphrodisias on divine providence',

ClassicalQuarterly 32.1 (1982), 208–11; idem, 'The unmoved mover and the motion of the heavens in Alexander of Aphrodisias', *Apeiron* 17.1 (1983), 62–6.

39. *El. Th.*, prop. 198.
40. On the difference in orbital speed from the moon to Saturn, *In Tim.*, 3.75.21–76. The 'Great Year' is not, in the main, the period of the precessional movement as is often assumed. Primarily, it is the sum total of all the periods which define Time, that is, the periodic movements of all cosmic bodies. On the complex issue of the moon's axial rotation, Cornford, op. cit., p. 119, uses it *ipso facto* to justify the Platonic self-motion of the celestial bodies. He infers that Proclus employs it as an example; however, no such thing appears in the Proclus reference given by Cornford, nor anywhere else, by my reading. Nevertheless, it would be correct to say that such axial rotation for the moon would follow from Proclus' doctrine. This would be uniquely his, for, as A. E. Taylor, op. cit., pp. 225–6, points out, Plato reserves self-rotation solely for the fixed stars. This would agree with the old Greek notion of the celestial bodies revolving as if fixed on cartwheels: essentially Aristotle's position, *Cael.* 2.8, 290a. That the moon shows always the same face is proof that it does *not* rotate axially. Others considered it purely an illusion created by the reflection of the earth's mountains and seas on the moon's smooth surface: attributed to Alexander of Aphrodisias by Simplicius, *In Cael.*, 457.
41. *In Tim.*, 3.77–8; Geminus, 1.5 (ed. Manitius).
42. Plato, *Tim.* 40b. J. L. E. Dreyer, op. cit., p. 71, comments that it is a curious fact that Plato by purely philosophical reasoning was brought to the conclusion that the heavenly bodies rotate around their own axis.
43. Number given by Ptolemy, *Syntaxis*, bk 7 ch. 3: 23.15–20.
44. A. E. Taylor, *Commentary on Tim.*, p. 209, calls it one of his occasional 'whimsicalities'; also his decision to support the Platonic order of the planets. Precession as a full 'apokatastatic' backward movement should be distinguished from the short-term oscillation of the equinoxes, known as the 'trepidation': the latter *is not* disputed by Proclus; O. Neugebauer, *A History of Mathematical Astronomy*, pp. 296–8, 598, 631–4, where Proclus is mentioned. The issue is complicated by the possibility that Hipparchus was the discoverer of both.
45. S. Sambursky, *The Physical World of the Greeks*, pp. 242–3; *The Physical World of Late Antiquity*; Neugebauer, op. cit., Introduction.
46. On Proclus' astronomy: A. Segonds, 'Proclus: Astronomie et Philosophie', in *Proclus lecteur*, ed. Saffrey and Pépin, pp. 319–34.
47. Technical astronomical material is from W. M. Smart, *Textbook on Spherical Astronomy*, 6th edn (1977). I am grateful to David Pingree for his perspicacious comments on ancient astronomy.
48. *Metaptôsis* means literaly 'variation'; more strongly, 'falling behind'. Cf. Hipparchus, *In Arati et Eudoxi phaenomena comment. libri tres*, ed. Manitius (Teubner, 1894), 30. Toomer, *Ptolemy's Almagest* (1984), p. 321 n.2, notes that only Hipparchus adopted the modern convention, that of change of the equinoctial points. Ptolemy described it as an advancing motion of the fixed stars.
49. Ptolemy, *Syntaxis*, 7.1, 7.3 and 7.4.
50. Simplicius, *In Cael.*, 117.
51. Simplicius, *In Cael.*, 462: study, O. Neugebauer, op. cit., p. 1,037.
52. Greek astronomical jargon for the eastward positions; it has also the connotation of 'backwards' in the opposite sense to the diurnal motion, and also relates to the precession; cf. O. Neugebauer, op. cit., p. 807.
53. The fixed stars have 'two' kinds of motion, the planets have at least 'three': so the hierarchy of motion is maintained. See also Proclus, *In Tim.*, 3.79–80 and cf. Simplicius, *In Cael.*, 462. On the 'splintering' of the ecliptical circulation: Plato, *Tim.* 36d1–6, who uses the term *schisas*, meaning that the (Demiurge) 'split' the Other circulation.
54. *kata ta auta*, *en tôi autôi*, *tropas*: all Platonic terms taken from *Tim.* 40ab, and used practically as technical phrases. *Tropas*, as A. E. Taylor points out, op. cit., p. 220, is not intended to mean 'rotations' but 'turnings back', as in the ecliptical motion; however, Proclus extends it to include the anomalous movements.
55. Proclus, *In Tim.*, 3.56. The six directions: Plato *Tim.* 34a, 40b, 43b–e; to them is added the 'seventh' motion of 'rational' rotation: *Laws* X 898; cf. Proclus, *In Tim.*, 3.122–3. For a debate on what handedness is attributed to the diurnal and the ecliptical circulations, see A. E. Taylor, op. cit., pp. 150–1; Heath, op. cit., pp. 160–3.
56. Plato, *Laws* X 896, where the soul is 'the movement which can move itself' and is, first, the origin of such self-motions as thoughts, choices, desires and the like (*tropoi*, *êthê*, *boulêseis*, *logismoi*):

Aristotle on the voluntary motion of the the planets; *On Philosophy*, fr. 24. Will is intrinsically linked to deliberation (*bouleusis*) and deliberate choice (*Prohairesis*).

57. On voluntary and deliberate action, J. M. Rist, '*Prohairesis*, Proclus, Plotinus et alii', in *De Jamblique à Proclus* (1975), pp. 103–22. See also R. W. Sharples, 'Alexander of Aphrodisias on divine Providence', and 'The Unmoved Mover and the motion of the heavens in Alexander of Aphrodisias': J. M. Rist, *Plotinus: The Road to Reality* (1967), chs 9 and 10. On the complex issue surrounding choice and deliberate action – defined as a narrower class than voluntary action – Sorabji, *NCB*, pp. 227–39, 243–56; R. W. Sharples, 'Responsibility, chance and not-being: Alexander of Aphrodisias, *Mantissa* 169–172', *Bulletin ICS* 22 (1975), 37–64.
58. Translation of G. E. R. Lloyd, *Greek Science after Aristotle* (1973), pp. 128–9.
59. Copernicus, *De Revolutionibus Orbium Coelestium*, V, 25. He refers to a theorem in Proclus' *Commentary on Euclid A*. 105 (Friedlein). For Proclus, see also *In Rep.*, 2.234.2–14. For further details, O. Neugebauer, *History of Mathematical Astronomy*, p. 1,035, with diagram, 1,431.
60. Aristotle *Cael.* 270a22–3.
61. Spiralling motion of the planets: Plato, *Tim.* 39ab; compound motion of the diurnal and the ecliptical: G. Vlastos, *Plato's Universe*, pp. 32–59; the 'contrariety', *Tim.* 36d, is nothing more than the opposite sense in direction. More problematic was the recurrence of 'contrary', *Tim.* 38cd, for the overtakings of the sun by Venus and Mercury, which Proclus ascribes to the differences in orbital speed; see *In Tim.*, 3.64–5. Another important source is Theon of Smyrna, *Mathematics Useful for the Reading of Plato*, ed. Hiller, chs 41–3. Cf. T. Heath, op. cit., pp. 166–7; F. M. Cornford, op. cit., pp. 88–92, 106–12; A. E. Taylor, op. cit., 196–200, 204–11.
62. For Proclus' account, including his attack on Heraklides, *In Tim.*, 3.133–44; also Simplicius, *In Cael.*, 517–19. For studies, Heath, op. cit., pp. 174–81, 186–9, 250–5; Cornford, op. cit., pp. 120–37; A. E. Taylor, op. cit., pp. 226–40; and especially H. B. Gottschalk, *Heraklides of Pontus* (1980), pp. 58–69, 81–7.
63. Earth as a passive instrument of Time which does not have to counter-rotate to produce the day–night cycle: cf. Cornford, op. cit., pp. 131–4, 137. For another ancient source, Simplicius, *In Cael.*, 511–12.
64. Both Rosán, *Philosophy of Proclus*, pp. 187–9, and Beutler, 'Proklos', Pauly and Wissowa (eds), 23.1, 241, give the Ptolemaic order as the sole Proclean order of the planets.
65. Sun and the moon as 'luminaries': Proclus, *Hyp. Astr.*, 88.22, 104, 126, 144; cf. Ptolemy, *Tetrabiblos* 2.17.
66. Theon of Smyrna, *Expositio rerum Mathematicarum ad Legendum Platonem utilium* (ed. E. Hiller), pp. 138–43.
67. O. Neugebauer, 'On the allegedly heliocentric theory of Venus by Heraklides Ponticus' (1972), reprinted in *Astronomy and History: Selected Essays* (1983), pp. 370–2; *A History of Ancient Mathematical Astronomy*, pp. 694–8; H. B. Gottschalk, *Heraklides of Pontus*, pp. 69–82. Both Neugebauer and Gottschalk agree that the references to 'over' and 'below' mean distances in longitude, not from earth, viz. that they mean 'ahead' and 'behind'. The two differ insofar as Neugebauer is against any reference to a heliocentric system, while Gottschalk seems to allow such a possibility as an added bonus for explaining the changes in brightness as a function of distance. On the whole, Heraklides' system does not appear to be important in the history of heliocentred arrangements of the planets.
68. Distances in Archimedes: O. Neugebauer, 'Aspects of early astronomy' (1972), repr. in *Astronomy and History*, op. cit., pp. 365–7; *A History of Mathematical Astronomy*, op. cit., pp. 647–51: according to the one table the order is: the moon – the sun – Venus – Mercury. But according to the other: the moon – Venus – Mercury – the sun. The estimates of Hipparchus and Posidonius put the moon approximately three times further than according to Aristarchus, and the sun, respectively; Ptolemy put the sun approximately three times further (my comparison from tables in Heath and Neugebauer).
69. Theon of Smyrna and 'heart of the universe', *Mathematics*, 138.16–19. The first-century BC 'Pythagorean' is Alexander of Ephesus, or Polyhistor, not of Aetolia as Theon refers to him: see T. Heath, op. cit., pp. 112–13.
70. *In Tim.*, 3.60.31–61.7; 3.63.24–7. Macrobius, *Somn. Scipio*, 1.18.3, defended the Platonic order on the grounds that the moon is the only celestial body to be illuminated directly by the sun and therefore the only body 'under' the sun. That it is the 'Egyptian' system cannot be found outside Macrobius. On Anaxagoras etc., Proclus says, *In Tim.*, 3.63.28–30, that according to Eudemus' evidence Anaxagoras was the first to arrange the planets as Plato did afterwards. Proclus is our

only source for it. However, it is more probable that Anaxagoras' order was the more general, the moon – the sun – the stars, as for Parmenides too; see T. Heath, op. cit., p. 74.

71. Cf. Proclus, *In Tim.*, 2.62.17–24.
72. Proclus, *Hyp. Astr.*, 144; cf. *In Tim.*, 3.62.6–16. The measurements have to be made at culmination, when Mercury and Venus are at the meridian: *Hyp. Astr.*, 116. At that position, the sun's light obscures them. See O. Neugebauer, *A History of Mathematical Astronomy*, pp. 100–18, 148.
73. On fitting Mercury and Venus between the moon and the sun: *In Tim.*, 3.62.24–63.20; *Hyp. Astr.*, 220–4. See also C. Mugler's notes on the construction of the proportions in A. J. Festugière, *Comm. sur le Timée*, 4, pp. 86–7.
74. *In Tim.*, 3.62.19f.; *Hyp. Astr.*, ch. 5 par. 11.
75. *Plat. Theol.*, 6 p. 358 (Portus). Cf. *In Tim.*, 2.312–13. See A. J. Festugière. *Comm. sur le Timée*, p. 3.358, n. 2: H. Lewy, op. cit., p. 195. nn. 75 and 76. See also A. E. Taylor. op. cit., pp. 242–3 on the circulation of Mercury and Venus.
76. William Harvey's preamble to *Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus* (London, 1628). *William Harvey: The Circulation of the Blood and Other Writings*, trans. K. J. Franklin, 2nd edn (London, 1990).

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SOURCES

Of Proclus' monographs, notable absentees from the surviving corpus are works on the 'harmony' of Orphic, Chaldaean, Pythagorean and Platonic doctrines, and a study on the Objections of Aristotle to Plato's *Timaeus*, fragments of which appear in Simplicius (*In Cael.*, *In Phys.*) and John Philoponus (*Contra Proclum*). In keeping with scholarly practice in the imperial Roman period, many of Proclus' writings are in the form of extensive commentaries. In content, there is little to distinguish them from monographs. Proclus' better-known commentaries are on Plato's dialogues. Many have not survived: on the *Theaetetus* (Proclus' favourite, *V. Procli* 38; cf. D. N. Sedley, 'Three Platonist interpretations of the *Theaetetus*'), the *Philebus*, the *Sophist*, the *Phaedo*, the *Phaedrus*, *Symposium*, and two appendices on the already extensive commentary on the *Timaeus* (the extant text stops at *Timaeus* 44cd). The extant commentary on the *Cratylus* survives only in a student's excerpts. Further, none of his commentaries on Aristotle, on the *Interpretation*, *Prior and Posterior Analytics*, or Introduction to the *Categories*, are extant. Of his commentary on Plotinus' *Enneads*, only a tiny portion survives.

Reliable texts of Proclus and associated Neo-Platonists are found mainly in French (Paris, Les Belles Lettres) or German (Leipzig, Teubner) editions. The Belles Lettres series have parallel French translations, comprehensive introductory articles and annotation. Some of the Teubner editions have parallel German translations. English translations are mainly those of Dodds, Morrow and Dillon. However, in nineteenth-century London, Thomas Taylor pioneered translations of most of Proclus' works in a modern language; recent reprints are available. Neo-Platonists' commentaries on Aristotle which happen to survive (e.g. Porphyry, Syrianus, Ammonius, Simplicius) occupy about 80 per cent of the collection, the *Commentaria in Aristotelem Graeca* (indicated by the acronym CAG), published by the Berlin Academy in the late nineteenth century. This collection is currently being translated into English (the Ancient Commentators on Aristotle) under the editorship of Richard Sorabji, and published by Cornell University Press, Ithaca, New York.

Although the book refers to people and ideas from the Presocratics to modern times, it is impractical to list everything relevant here. Further references relating to particular topics are found in the notes. For a comprehensive list of Greek texts, see L. Berkowitz and K. Squitier, *Thesaurus Linguae Graecae, Canon of Greek Authors and Works*, 3rd edn. (Oxford: Oxford University Press, 1990). Bibliographies on Plato, Aristotle, the Stoics, Plotinus, Iamblichus, Simplicius, Philoponus and on modern epistemology and metaphysics are available in relevant publications. Sigla have been avoided, except for the Sorabji books; abbreviations are given below. Abbreviations to the works of Plato and Aristotle are according to convention; commentaries are indicated by '*In*' followed by the appropriate title (usually a Platonic dialogue, an Aristotelian treatise, or Porphyry's *Isagoge*). Works and ancient authors (other than Proclus) are listed alphabetically.

Proclus

Monographs

Chaldaean Philosophy: in *Oracles Chaldaïques*, ed. and trans. E. des Places (Paris: Les Belles Lettres, 1971), pp. 202–12 (parallel Greek text and French translation, with the treatises by Proclus and Psellus). English translation: with Iamblichus, *Exhortation to Philosophy*, and Proclus' commentary on the Chaldaean oracles (trans. Thomas Moore Johnson (1907); repr. Grand Rapids: Phanes Press, 1988). Greek text: *De Philosophia Chaldaica. Accedit Hymnus in Deum Platonicus, vulgo S. Gregorio Nazianzeno adscriptus, nunc Proclo Platonico vindicatus*, ed. A. Jahn (Halle, 1891), pp. 1–46, with the *Hymn to God*, pp. 62–77.

Decem Dub.
On Providence: *Dix problèmes concernant la providence*, ed. D. Isaac (Paris: Les Belles Lettres, 1977) (parallel Greek text and French translation). English translation: with *On Fate*, and *On Evil*, Thomas Taylor (1833).

De Mal. Subs.
On Evil: *De l'existence du Mal*, ed. D. Isaac (Paris: Les Belles Lettres, 1982) (parallel Greek text and French translation).

De Prov.
On Fate: *Providence, Fatalité, Liberté*, ed. D. Isaac (Paris: Les Belles Lettres, 1979) (parallel Greek text and French translation).

Eighteen Arguments on the Eternity of the World against the Christians: in John Philoponus, *De Aeternitate Mundi contra Proclum*, ed. H. Rabe (Leipzig: Teubner, 1899).

El. Phys.
The Elements of Physics, or *On Motion*: *Institutio physica*, ed. A. Ritzenfeld (Leipzig: Teubner, 1912) (parallel Greek text and German translation). English translation: Thomas Taylor (1831): no Neo-Platonic theorems, but a short study manual on Aristotle's *Physics* books 6 and 7 and *On the Heavens* book 1.

El. Th.
Proclus. The Elements of Theology, ed. and trans. E. R. Dodds, 2nd edn (Oxford: Clarendon Press, 1963; repr. 1992) (parallel Greek text and English translation) French translation: *Proclos. Éléments de théologie*, trans. J. Trouillard (Paris: Aubier, 1965); additional comments, P. Hadot, 'La théologie de Proclus', *Revue des Études Grecques* 88 (1975), 220–3. Italian translation: *Proclo. Elementi di Theologia*, trans. E. Di Stefano (Catania, 1994). Citations are by the proposition numbers.

Hier. Art
Hieratic Art: *De sacrificio et magia*, ed. and trans. J. Bidez, in *Catalogues des manuscrits alchimiques grecs* 6 (Brussels: Lamertin, 1928), pp. 139–51.

Hymns: *Hymni*, ed. E. Vogt (Wiesbaden: Harrassowitz, 1957). English translation: Thomas Taylor (1795, repr. with Marinus, *The Life of Proclus*, Grand Rapids: Phanes Press, 1986). French translation: *Proclus Hymnes et prières*, trans. H. D. Saffrey (Paris: Arfuyen, 1994).

Hyp. Astr.
Outline of the Astronomical Hypotheses: *Hypotyposis astronomicarum positionum*, ed. and trans. C. Manitius (Leipzig: Teubner, 1909; repr. Stuttgart, 1974) (parallel Greek text and German translation). Critical examination of Ptolemy's astronomy.

Plat. Theol.
Platonic Theology: *Théologie platonicienne*, vols 1–5 (vol. 6 due 1997), ed. and trans. H. D. Saffrey and L. G. Westerink (Paris: Les Belles Lettres, 1968–) (parallel Greek text and French translation). Greek text and Latin translation: vols 1–6, ed. Aemilius Portus (Hamburg, 1618). *The Platonic theology in six books* translated from the Greek by Thomas Taylor (1816, repr. Frome: Prometheus Trust, 1995).

Commentaries

In Alc.
Commentary on Plato's Alcibiades I: *Sur le premier Alcibiade de Platon*, ed. and trans. A. Ph. Segonds, 2 vols (Paris: Les Belles Lettres, 1985–6) (parallel Greek text and French translation). English translation: *Proclus, Alcibiades I*, trans. W. O. Neill (The Hague: Nijhoff, 1971).

In Crat.
Commentary on Plato's Cratylus: *In Platonis Cratylum commentaria*, ed. G. Pasquali (Leipzig: Teubner, 1908) (Greek text). Greek text and Italian translation: *Proclo. Lezioni sul Cratilo di Platone*, trans. F. Romano (Catania, 1987). Short commentary: M. Schofield, 'A displacement in the text of the "Cratylus" ', *The Classical Quarterly* n.s. 22 (1972), 246–53.

In Eucl.
Proclus, A Commentary on the First Book of Euclid's Elements, ed. G. R. Morrow (Princeton: Princeton

University Press, 1970; repr. 1992 with foreword by I. Mueller) (English translation). Greek text: *In primum Euclidis elementorum librum commentarii*, ed. G. Friedlein (Leipzig: Teubner, 1873) (text is in great need of revision, in progress by A. Segonds, Les Belles Lettres).

In Parm.
Commentary on Plato's Parmenides: *In Platonis Parmenidem*, ed. V. Cousin (Paris: Durand, 1864; repr. Hildesheim: Olms, 1961) (Greek text). Text references are by column and line of the Cousin edition. Book 7 is preserved in a Latin rendering by William Moerbeke, text: R. Klibansky and L. Labowsky (London, 1953); *Commentaire sur le Parménide de Platon*, ed. C. Steel, 2 vols (Leuven, 1982–5); *Proklus Kommentar zu Platons Parmenides 141E–142A*, R. Bartholomai (St Augustin: Richarz, 1990) (parallel Latin text and German translation). English translation of whole: *Commentary on Plato's Parmenides*, trans. J. M. Dillon and G. R. Morrow (Princeton: Princeton University Press, 1987; repr. 1992).

In Rep.
Commentary on Plato's Republic: *In Platonis rem publicam commentarii*, vols 1–2, ed. W. Kroll (Leipzig: Teubner, 1899–1901) (Greek text). French translation: *Proclus. Commentaire sur la République*, trans. A. J. Festugière (Paris: Vrin, 1970).

In Tim.
Commentary on Plato's Timaeus: *In Platonis Timaeum commentaria*, vols 1–3, ed. E. Diehl (Leipzig: Teubner, 1903–6; repr. Amsterdam: Hakkert, 1965) (Greek text). French translation: *Proclus Commentaire sur le Timée*, trans. A. J. Festugière, 5 vols (Paris: Vrin, 1966–8). English translation: Thomas Taylor (1810; repr. Hastings: Chthonios Books, 1988).

On Plotinus' Enneads: L. G. Westerink, 'Exzerpte aus Proklos Enneaden-Kommentar bei Psellos', *Byzantinische Zeitschrift* 52 (1959), 1–10. English translation: Thomas Taylor, *Translations of treatises of Plotinus* (1834).

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Alcinoos. Enseignement des doctrines de Platon, ed. and trans. J. Whittaker and P. Louis (Paris: Les Belles Lettres, 1990) (parallel Greek text and French translation). English translation: *Alcinous: The Handbook of Platonism*, trans. J. M. Dillon (Oxford: Clarendon Press, 1993).

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Ammonius (fifth century)

In Isag.
In Porphyrii Isagogen sive quinque voces, ed. A. Busse, CAG 4.3 (Berlin: Reimer, 1891) (Greek text).

In Categ.
In Aristotelis Categorias commentarius, ed. A. Busse, CAG 4.4 (Berlin: Reimer, 1895) (Greek text). English translation in Ancient Commentators on Aristotle series: *Ammonius on Aristotle's Categories*, trans. G. Matthews and S. Cohen (1991).

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Anonymous Late Alexandrian (sixth to seventh century)

Anonymous Prolegomena to Platonic Philosophy, ed. L. G. Westerink (Amsterdam: North-Holland, 1962) (parallel Greek text and English translation); new edition with French translation, *Prolégomènes à la Philosophie de Platon*, ed. and trans. L. G. Westerink, J. Trouillard and A. Ph. Segonds (Paris: Les Belles Lettres, 1990).

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Saffrey, H. D., 'Les néoplatoniciens et les Oracles Chaldaïques', *Revue des Études Augustiniennes* 26 (1981), 209–25. (Important study on the origin of the Oracles.)

Damascius (fifth to sixth century)

In Phaed.
The Greek Commentaries on Plato's Phaedo 2, ed. and trans. L. G. Westerink (Amsterdam: North-Holland, 1977) (parallel Greek text and English translation).

In Parm.
Commentaire du Parménide, ed. and trans. L. G. Westerink and J. Combès (Paris: Les Belles Lettres, 1995–) (parallel Greek text and French translation) (previous edn Ruelle).

Princ.
Traité des Premiers Principes, 3 vols, ed. and trans. L. G. Westerink and J. Combès (Paris: Les Belles Lettres, 1986–91) (parallel Greek text and French translation). Previous edition: *Dubitationes et Solutiones de Primis Principiis*, 2 vols, ed. C. A. Ruelle (Paris, 1889).
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Dexippus (fourth century)

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Iamblichus (third to fourth century)

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Myst.
On the Mysteries: *Jamblique. Les mystères d'Égypte*, ed. and trans. E. des Places (Paris: Les Belles Lettres, 1966) (parallel Greek text and translation). English translations: *On the Mysteries* (Thomas Taylor; Alexander Wilder) (repr. Hastings: Chthonios Books, 1989).

Marinus (fifth century)

Commentaire aux Data d'Euclide, trans. M. Michaux (Louvain: Rec. de Travaux d'Histoire et de Philosophie 3, ser. 25, 1947) (French translation). Greek text in *Euclid Opera*, vol. 6, ed. J. L. Heiberg and H. Menge (Leipzig: Teubner, 1883–1916), p. 234.

V. Procli
Vita di Proclo, R. Masullo (Naples: D'Auria, 1985) (Greek text and Italian translation). *Vita Procli*, ed. J. F. Boissonade (Leipzig: Teubner, 1850; repr. in *Procli opera*, ed. V. Cousin, Paris, 1864) (Greek text). English translation in L. J. Rosán, *The Philosophy of Proclus* (New York: Cosmos, 1949).

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Olympiodorus (sixth century)

In Alc.
Olympiodorus. Commentary on the first Alcibiades of Plato, ed. L. G. Westerink (Amsterdam: Hakkert, 1956; repr. 1982) (Greek text).

In Gorg.
Olympiodori in Platonis Gorgiam commentaria, ed. L. G. Westerink (Leipzig: Teubner, 1970) (Greek text).

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The Greek Commentaries on Plato's Phaedo 1, ed. L. G. Westerink (Amsterdam: North-Holland, 1976) (parallel Greek text and English translation).

John Philoponus (sixth century)

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De Aeternitate Mundi contra Proclum, ed. H. Rabe (Leipzig: Teubner, 1899) (Greek text). On the first argument extant in Arabic, 'Neoplatonici apud Arabes', A. Badawi (ed.), *Islamica* 16 (Cairo, 1954), and French translation: 'Un fragment perdu du De Aeternitate Mundi de Proclus', trans. G. C. Anawati, in *Mélanges de Philosophie Grecque Offerts* (Paris, 1956).

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In Categ.
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Simplicius (sixth century)

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Simplicius, *In Aristotelis de Caelo commentaria*, ed. J. L. Heiberg, CAG 7 (Berlin: Reimer, 1894) (Greek text).

In Categ.
Simplicius, *In Aristotelis Categorias commentarium*, ed. C. Kalbfleisch, CAG 8 (Berlin: Reimer, 1907) (Greek text). French translation: *Simplicius. Commentaire sur les Catégories*, 2 vols, trans. I. Hadot, Ph. Hoffmann et al. (Leiden: Brill, 1990).

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